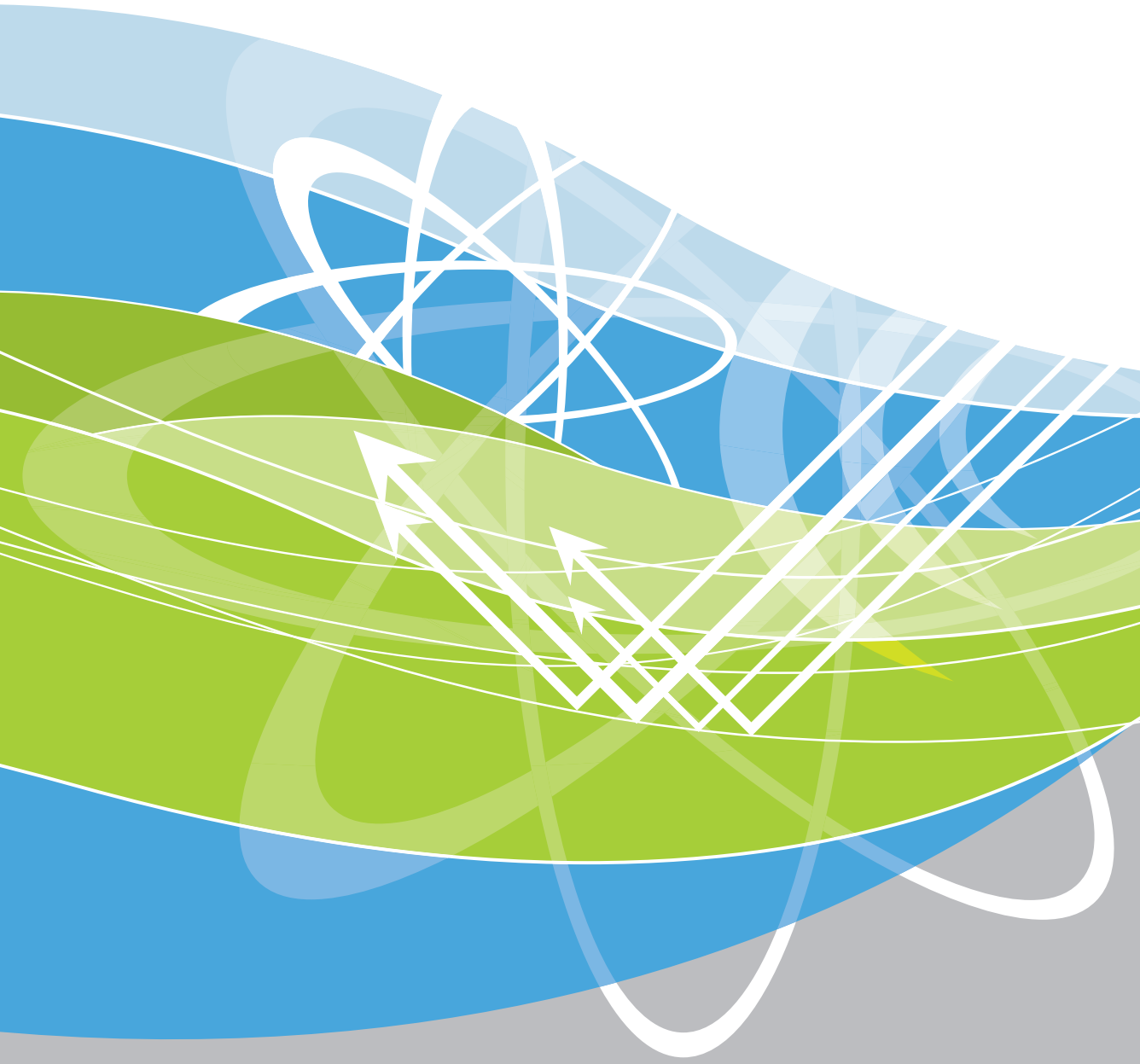
Australian Government

Australian Radiation Protection and Nuclear Safety Agency

ARPANSA

Annual Report of the Chief Executive Officer



ANNUAL REPORT **2011-12**

Annual Report of the Chief Executive Officer of ARPANSA 2011-12

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This report meets the requirements of section 8 of the *Freedom of Information Act 1982* which requires each Commonwealth Agency to publish information about the way it is organised, its functions, powers and arrangements for public participation in its work.

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Australian Radiation Protection and Nuclear Safety Agency

14 September 2012

The Hon Catherine King MP
Parliamentary Secretary for Health and Ageing
House of Representatives
Parliament House
CANBERRA ACT 2600

Dear Parliamentary Secretary

In accordance with section 59 of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the ARPANS Act), I present to you for transmittal to the Parliament the Annual Report of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) for the period 1 July 2011 to 30 June 2012.

As required by the ARPANS Act, my report provides details on:

– the operations of the CEO, ARPANSA and the Council and Committees

– any direction given by the Minister to me under section 16 of the ARPANS Act and any breach of licence conditions by a licensee, of which I am aware

– all reports received from the Radiation Health and Safety Advisory Council on matters related to radiation protection and nuclear safety or the Nuclear Safety Committee on matters related to nuclear safety and the safety of controlled facilities.

The report of the independent auditor on the financial statements of ARPANSA for 2011-12 and the financial statements are included with this report which also meets the *Requirements for Annual Reports* issued by the Department of the Prime Minister and Cabinet and updated 28 June 2012.

Yours sincerely

CEO of ARPANSA

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Our Agency


Australian Government
Australian Radiation Protection and Nuclear Safety Agency
PROTECTING THE PUBLIC AND ENVIRONMENT FROM THE HARMFUL EFFECTS OF RADIATION
www.arpansa.gov.au

Our agency

Protecting Australians and the environment from the harmful effects of radiation

Authority

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) operates under the *Australian Radiation Protection and Nuclear Safety Act 1998* (the ARPANS Act). The ARPANS Act allows the Chief Executive Officer (CEO) to engage staff to assist the CEO perform his statutory functions. Together, the CEO and staff constitute a statutory agency for the purposes of the *Public Service Act 1999* and a prescribed agency under the *Financial Management and Accountability Act 1997* within the Health and Ageing Portfolio.

Responsible ministers and portfolio

The Parliamentary Secretary to the Minister for Health has ministerial responsibility for ARPANSA. Our Parliamentary Secretary for this financial reporting period is The Hon Catherine King, MP.

Funding basis

ARPANSA receives funding through appropriations received by the Department of Health and Ageing.

ARPANSA's own sourced income comes from the sale of scientific services such as the Personal Radiation Monitoring Service, work performed under the Comprehensive Nuclear-Test-Ban Treaty Organization contracts to build, operate and maintain monitoring stations, and licence application fees and annual charges associated with ARPANSA's regulatory activities.

Our outcome

Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, services and regulation.

Our people

As at 30 June 2012 ARPANSA employed a total of 139 ongoing and 14 non-ongoing staff. Our people are specialists in nuclear and medical physics, radiation sciences, chemistry, biological sciences, security and emergency preparedness as well as communications, government policy, law, finance and human resources.

'The protection of the public and environment from radiation requires a risk-based approach that takes account of both safety and security. It is also necessary to: provide appropriate and effective information on exposure to all sources of ionising and non-ionising radiation; interact with and inform the Australian community about the risks associated with exposure to radiation; and, promote the implementation of radiation safety measures that optimise the protection of the public and the environment.'

ARPANSA Strategic Directions 2012-2016:p.3

Where we work

ARPANSA's staff are spread across three campuses: Miranda in New South Wales, Yallambie in Victoria and Canberra in the Australian Capital Territory.

Our mission

To assure the protection of people and the environment from the harmful effects of radiation.

Our vision

Radiation safety is appropriately considered in societal decision-making which rests on sound science, with radiation safety given appropriate weight, guiding the use of precaution as necessary.

Radiation safety is consistently applied, across jurisdictions and across activities, in a manner that is commensurate with the risk.

Radiation safety in Australia is current international best practice and ARPANSA takes a lead role in the enhancement of the international radiation safety framework, promoting and implementing best practice nationally, in the region and internationally.

Key areas

ARPANSA delivers outcomes for Australian society in a set of Key Areas, covering all agency activities (*ARPANSA Strategic Directions 2012-2016*). Each Key Area is governed by strategies that remain long-term although flexible and adaptable. The strategies are implemented through activities that are defined yearly and form the basis for the Portfolio Budget Statement and ARPANSA's Business Plans.

Performance reporting

ARPANSA's success in achieving its outcome is measured against specific deliverables and key performance indicators outlined in the *Portfolio Budget Statements 2011-12* and performance is described in Section 3.

Our history

Protecting Australians and the environment from the harmful effects of radiation

Prior to 1998 Commonwealth radiation sources and practices were not regulated at a Commonwealth level.

1929

The Australian Radiation Laboratory (ARL) of the Commonwealth Department of Health is established as the Commonwealth Radium Laboratory, responsible for providing advice to Government and the community on the health effects of radiation, and for undertaking research and providing services in this area.

1984-1985

ARL conducts preliminary studies on the former British atomic test sites at Maralinga indicating that contamination levels were significantly higher than previously reported. ARL's findings convinces the Australian Government to set up a technical assessment group in 1986 to oversee further technical studies of the site and to advise on rehabilitation options.

1992

The Nuclear Safety Bureau (NSB) is established and operated under Part VIIA of the *Australian Nuclear Science and Technology Organisation Act 1987* and was responsible for regulating the HIFAR and Moata research reactors at Lucas Heights in Sydney.

1993

ARL scientific experts commence work on the Maralinga Rehabilitation Technical Advisory Committee (MARTAC) – a whole of Government initiative – to evaluate radiological risks and develop and effective clean-up and land remediation of the contaminated sites so that the risk to potential inhabitants from exposure to radioactive contamination would be within safe limits.

1994-2000

Work commences on the MARTAC Project during which at each stage, ARL and later ARPANSA, took comprehensive measurements. The project consisted of defining the clean-up boundaries at the sites contaminated with plutonium, followed by bulk removal of contaminated soil from the three sites and burial within purpose-built burial trenches. Completion of the project resulted in much lower levels of radiation than was predicted in the original MARTAC report.

'As the Commonwealth regulator, ARPANSA is the Australian independent centre of excellence in radiation protection and nuclear safety. Our mandate covers ionising and non-ionising radiation, safety and security of nuclear installations and radioactive sources, and preparedness and response to accidents or malicious acts involving radiological hazards.'

ARPANSA Strategic Directions 2012-2016:p.1

1996

Responsibility for the Australian primary standard of absorbed dose in medical radiation exposures is transferred to ARL with the agreement of Australian Nuclear Science and Technology Organisation (ANSTO), and as provided for by the *National Measurement Act 1960.*

1997

The Federal Government announces that it will combine the ARL and the NSB and establish ARPANSA as a new regulatory body with underpinning legislation - the *Australian Radiation Protection and Nuclear Safety Act 1988* (the ARPANS Act).

1998

The ARPANS Bill is passed by both houses on Thursday, 10 December 1998 creating ARPANSA.

5 February 1999

The ARPANS Act enters into force.

17 March 1999

ARPANS Regulations enter into force.

15 April 1999

Dr John Loy is appointed as the first CEO of ARPANSA.

22 April 1999

The Australian Health Ministers' Advisory Council accepts proposals for the development of the *National Directory for Radiation Protection* which is a vehicle for the delivery of national uniformity in radiation protection across all states and territories.

1999

The National Competition Policy Review agrees on a policy review of radiation control frameworks across all states and territories.

The National Health and Medical Research Council ceases publishing the Radiation Health Series and hands responsibility for revision to ARPANSA. Future documents would be developed in the new Radiation Protection Series.

Our history

Protecting Australians and the environment from the harmful effects of radiation

1 June 1999

ARPANSA sets up the International Monitoring System (IMS) which includes monitoring stations in Perth and Melbourne forming part of the IMS global network required under the terms of the *Comprehensive Nuclear-Test-Ban Treaty*.

2000

ARPANSA authorises the Department of Resources, Energy and Tourism to operate the Maralinga site as a controlled facility under the ARPANS Act.

5 April 2002

ARPANSA issues a licence to ANSTO to construct a new research reactor, the Open Pool Australian Light-Water Reactor (OPAL) to replace the ageing HIFAR reactor at ANSTO.

14 July 2006

OPAL is issued with an operating licence.

12 August 2006

OPAL commences operations.

25 June to 6 July 2007

The International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service (IRRS) commences a comprehensive peer review and appraisal service of ARPANSA's operations focusing upon the effectiveness of ARPANSA's regulatory infrastructure in nuclear, radiation, radioactive waste and transport safety.

2008

Dr John Loy retires as CEO of ARPANSA and is replaced by interim Acting CEO Mr Peter Burns, a senior health physicist and Branch Director, Environmental and Radiation Health Branch, ARPANSA.

October 2008

ARPANSA installs an Elekta Synergy Platform medical radiotherapy treatment linac to develop absorbed dose standards at megavoltage energies and to provide direct calibration of reference ionisation chamber dosemeters.

18 December 2009

ARPANSA CEO and senior scientists attend the formal handback ceremony of Maralinga lands to Traditional Owners, the Maralinga Tjarutja.

March 2010

Dr Carl-Magnus Larsson is appointed as the CEO of ARPANSA.

1 July 2010

The Australian National Radiation Dose Register (ANRDR) is established to collect, store, manage and disseminate records of radiation doses received by workers in the course of their employment in a centralised database. The ANRDR is a system for uranium mining workers to be able to request their individual dose history record.

4 February 2011

The Australian Clinical Dosimetry Service (ACDS) which is a joint initiative between the Department of Health and Ageing and ARPANSA is officially launched by the Parliamentary Secretary for Health and Ageing, the Hon Catherine King, MP at ARPANSA's Yallambie campus. The ACDS was created to audit radiotherapy doses to provide an integrated national approach to promoting safety and quality in radiotherapy and lead to further improvements in patient treatment outcomes.

11 March 2011

Immediately following the Great East-Japan Earthquake and Tsunami, ARPANSA commences comprehensive assessment of the situation to advise the Government and the Australian public on radiation protection and nuclear safety issues associated with the nuclear emergency.

May 2011

Formal organisational restructure of ARPANSA rolled out.

May 2011

Decommissioning of ANSTO's Moata reactor which was a first for Australia. ARPANSA is satisfied that radioactive waste from the decommissioning process had been appropriately transferred to an existing waste licence and that there was no residual danger from radiation in the building that had housed the reactor.

December 2011

The IAEA IRRS follow-up mission concludes that most recommendations and suggestions from the 2007 IRRS review have been addressed by ARPANSA and that ARPANSA should be commended for this accomplishment.

February 2012

Department of Health and Ageing commences a review of the ARPANS Act.

Part 1: Review by the CEO

Review by the CEO of ARPANSA – Dr Carl-Magnus Larsson

I am pleased to present the fourteenth Annual Report of the CEO of ARPANSA, the third under my stewardship of ARPANSA.

2011-12 will be remembered as the year that the world came to terms with the aftermath of the Fukushima nuclear accident and took new initiatives to promote and improve nuclear safety. From the organisational point of view, it was also the year that our organisational restructure began to materialise with the aim of supporting ARPANSA's continuous development into a more mature, streamlined and responsive agency with an expanded presence in Canberra.

A vital role our agency performs is to assist evidence-based decision making by Government as it sets the policy agenda for Australia in radiation safety. This is achieved by deepening our understanding of sources and effects of radiation, and to apply international best practice in radiation regulation to keep our portfolio department and the Government briefed on important existing and emerging science and regulatory issues. We also strive to maintain regular and meaningful dialogue with other government agencies on issues of mutual interest.

ARPANSA's Canberra office works closely with ministerial advisers in the Parliamentary Secretary's Office and the Department of Health and Ageing to respond effectively to the Government's policy agenda and to support our Ministers. ARPANSA does this by providing high quality technical information and policy advice in relation to radiation protection and nuclear safety in the form of ministerial and parliamentary briefing material and responses, minutes on ARPANSA's operating activities and responses to ministerial correspondence as well as complying with our statutory reporting obligations.

This financial year, the ARPANSA Board changed its name to the Strategic Management Committee to more accurately describe its function and role within ARPANSA's governance structure and to better reflect governance arrangements for a Financial Management and Accountability Act agency, such as ARPANSA, where the focus is on achieving strategic objectives.

Significant issues and developments

Nuclear safety following the Fukushima Dai-ichi Nuclear Power Plant accident, Japan

It is not possible to reflect on the events of the past twelve months without reference to the Fukushima accident in March 2011. ARPANSA has been continually assessing the nuclear situation in Japan following the Great East-Japan Earthquake and Tsunami of 11 March 2011. Through our links with the International Atomic Energy Commission (IAEA), the World Health Organization (WHO) and other international and Australian Government agencies, ARPANSA continues to monitor the radiation situation in Japan and beyond in order to properly advise the Australian Government and public on radiation protection and nuclear safety issues. Our radiation protection advice is provided through the ARPANSA website which is updated on a regular basis.

Our advice has focused upon reactor status, current and likely future spread of radioactive substances, doses to workers and the population, and health and environmental consequences in Japan, Australia and elsewhere and is based on information from the IAEA and a range of other reputable sources.

The Japanese authorities announced in December 2011 that the reactors stricken by the earthquake and tsunami of 11 March 2011 have now been brought to 'cold shutdown' and that conditions are stable. However, ARPANSA's monitoring of the situation continues.

As expected, the Japan nuclear accident continued to drive much of our international engagement activities.

In August 2011, ARPANSA attended as a member of the first meeting of the IAEA Regional Co-Operative Agreement on Marine Benchmark Study to establish a work program for Member States to evaluate the extent and possible impact of the radioactive releases from the Fukushima Dai-ichi nuclear power plant into the marine environment and make scientific assessments of the data.

ARPANSA attended various Asian Nuclear Safety Network meetings in September, November 2011 and May 2012 in Thailand, Korea and Indonesia respectively, focusing upon emergency preparedness, protective measures, nuclear safety and lessons learned from the Fukushima nuclear accident.

I attended the 55th General Conference of the IAEA from 19 to 23 September 2011 as a member of the Australian Delegation. A significant part of the General Conference was devoted to nuclear safety as well as transport, radiation and waste safety and to discuss the *IAEA Action Plan on Nuclear Safety* which arose in response to the Fukushima nuclear crisis.

ARPANSA represented Australia at the 30th and 31st meetings of the Commission on Safety Standards held in Vienna in November 2011 and March 2012, which considered lessons learned from the Fukushima nuclear emergency and potential for revision of *Safety Requirements* covering all aspects of radiation protection, radioactive waste safety, transport and nuclear safety including a major rewrite of the IAEA *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards*.

In May 2012, I attended the 59th Session of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) as Vice-Chair and Australia's representative. I was elected Chair of the Committee for its 60th and 61st sessions and will be responsible for managing the Committee's work program and reporting to the UN General Assembly until 2014. UNSCEAR is currently undertaking a comprehensive assessment of radiological exposures and environmental impacts caused by the 2011 Great East-Japan Earthquake and Tsunami, which is expected to be published in late 2013.

The International Atomic Energy Agency Integrated Regulatory Review Service

The IAEA Integrated Regulatory Review Service (IRRS) provides Member States with an independent assessment of their effectiveness of their national regulatory infrastructure to ensure the safety of nuclear and radiological activities from 'cradle to grave'.

ARPANSA staff examining the radioactive fallout plume from the Fukushima Dai-Ichi Nuclear Power Plant Accident, Japan

Photo by Joerg Lehmann

Between 7 and 15 November 2011, the IAEA's IRRS conducted its follow-up mission at ARPANSA which captured the implementation of the 2007 recommendations and review according to the IRRS module on patient protection. This mission also included policy issue discussions on emergency preparedness and response, radioactive waste management, patient protection and national uniformity. The IRRS concluded that the recommendations and suggestions from the 2007 review have largely been addressed, noting that that significant progress had been achieved and many improvements made, particularly in the twelve months preceding the mission.

The international peer review system allows the receiving countries to draw on the expertise of international colleagues, looking at the domestic infrastructure against the backdrop of their national experience, leading to recommendations, suggestions and the identification of good practices. Naturally, Australia (ARPANSA) also offers such advice to other countries through participation in the international peer review program. In line with this commitment, in December 2011, I led an IRRS mission team to the United Arab Emirates (UAE), assessing the regulatory infrastructure with particular regard to the mandate and activities of the federal regulatory body, the Federal Authority for Nuclear Regulation, located in Abu Dhabi. Details of the UAE IRRS mission are available at www.iaea.org/newscenter/pressreleases/2011/prn201131.html.

In May 2012, ARPANSA participated, with ARPANSA's Professor Peter Johnston as Deputy Team Leader, in an IRRS mission to Greece to examine the work of the Greek Atomic Energy Agency which includes regulation of industrial, medical and research facilities as well as transport and security of radioactive materials.

National uniformity and regulation

ARPANSA promotes national uniformity and international best practice in radiation and nuclear safety through its *National Directory for Radiation Protection* (NDRP) which is jointly developed by ARPANSA and the state and territory radiation regulators through the Radiation Health Committee. During this financial year, draft NDRP Amendment No. 6 was developed covering various topics including exemptions of krypton-85 lighting products; new licensing requirements for chiropractors; clarifying incident reporting requirements and other matters.

Protect the public and environment from radiation exposure

ARPANSA continued to monitor levels of radioactivity in the environment through our accredited Environmental Radiochemistry Laboratory which provided a range of commercial services and participated in proficiency testing programs and screening of food samples from Japan as part of the Department of Agriculture, Fisheries and Forestry Imported Food Program. Some 600 food samples from Japan have been screened with mostly very low activity levels. A report on ARPANSA's monitoring program related to the nuclear accident is expected to be published in September 2012.

In this financial year, ARPANSA's Radiochemistry Laboratory also assessed levels of naturally occurring radioactive materials (NORM) from samples collected from selected metal mines, collieries and quarries in New South Wales and in August 2012, ARPANSA published its findings in *A survey of naturally occurring radioactive material associated with mining*. The survey found that most mining operations do not have issues related to elevated levels of NORM and that average radon concentrations were below the action level for occupational exposure. The report is available at www.arpansa.gov.au/pubs/technicalreports/tr161.pdf.

This year we continued our work under the *Maralinga Land and Environment Management Plan* which completed radiological surveys reassessing the health impact on the Oak Valley community of radionuclide contamination from historical British nuclear weapons testing at Maralinga. Our report found that health impacts were negligible and that the current restrictions on full time living in the Taranaki restricted area at Maralinga were still appropriate. The full report is available at www.arpansa.gov.au/pubs/technicalreports/tr158.pdf.

Radioactive waste safety

ARPANSA has developed a *Draft Regulatory Guide: Licensing of Radioactive Waste Storage and Near Surface Disposal Facilities* which is currently undergoing a public consultation process due for completion in October 2012. This Guide is intended

Ranger uranium mine, Northern Territory

to supersede an earlier 2006 version and advises potential Commonwealth applicants on how to proceed to apply for a licence for a radioactive storage or disposal facility under the terms of the ARPANS Act, including facilities constructed on land volunteered under the *National Radioactive Waste Management Act 2012*. It describes objectives for protection of human health and of the environment, drawing upon international best practice in relation to radiation protection and radioactive waste safety.

ARPANSA attended the Fourth Review Meeting of the Contracting Parties to the *Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management* at the IAEA's Headquarters in Vienna, Austria between 14 to 23 May 2012. The Australian Delegation was led by ARPANSA's Professor Peter Johnston. At this forum, Australia was commended for hosting an IAEA Integrated Regulatory Review Service mission and follow-up, updating regulatory guidance for storage and disposal incorporating international best practice and having a strong legislative requirement for comprehensive community and stakeholder consultation.

Monitoring exposure to extremely low frequency electromagnetic fields and radiofrequency electromagnetic energy

ARPANSA continued its limited, but important, program to monitor public exposure to radiofrequency electromagnetic energy (RF EME) with measurements to exposure levels from mobile telephone base stations and to publish comparisons with the EME predictions made by industry in accordance with ARPANSA guidelines. We also responded to a continual number of public and media enquiries about health concerns around mobile phones, mobile phone base stations, Wi-Fi, smart meters and other established and emerging technologies.

At the international level, ARPANSA is an international WHO Collaborating Centre on Radiation Protection and a member of the World Health Organization (WHO) International Electro Magnetic (EMF) Project. Dr Lindsay Martin from ARPANSA was the chair of the Annual International Advisory Committee meeting of the WHO International EMF project in Geneva from 5-6 June 2012.

Limit workers' exposure to radiation

ARPANSA continued to promote a high level of protection for Australian workers from radiation and in 2011-12 ARPANSA engaged industries with increased levels of naturally occurring radioactive materials, such as coal-fired power generation and metal extraction industries, to evaluate how radiation protection controls are designed to mitigate potential risks. We undertook screening surveys of New South Wales mines for technological enhancements of naturally occurring radioactive materials.

Noting that uranium mining workers can be exposed to particularly high levels of naturally occurring radiation, ARPANSA continued its management of the Australian National Radiation Dose Register (ANRDR) which collects, stores and audits radiological dose histories for uranium miners. In June 2012, the first ANRDR workshop took place, attended by representatives of the uranium mining industry, contractors, and government organisations and it considered progress made, methodologies used for radiation dose assessments and plans for improvement. From July 2012, the ANRDR began receiving occupational dose records from Ranger uranium mine in the Northern Territory following the passage of new Northern Territory legislation.

ARPANSA also provided guidance and advice to workers exposed to solar ultraviolet radiation, against the backdrop of Australia's high rates of skin cancer, with over 400 000 new cases each year. ARPANSA continued to measure and report daily solar ultraviolet radiation levels in large population centres around Australia as part of our public information efforts to reduce the incidence of this avoidable disease to both workers and members of the public.

Promote the effective use of ionising radiation in medicine

ARPANSA continued to work closely with the medical profession to deliver better patient outcomes in the use of ionising radiation in medicine. The aim was to ensure that diagnostic doses are optimised to provide diagnostic information with the minimum radiation exposure and that in radiotherapy the prescribed dose is delivered to the target area of the patient's body.

Now a year into operation, the Australian Clinical Dosimetry Service (ACDS) has demonstrably contributed to improving safety of radiation oncology throughout Australia over this reporting period. The ACDS has achieved nearly complete signup to its voluntary audit program from centres nationally and has requests for audits extending into 2013.

In 2012, ARPANSA is working towards the introduction of a direct radiotherapy calibration service using the ARPANSA linear accelerator (linac) megavoltage X-ray beams to reduce the uncertainty for clinical treatment for patients across Australia.

This financial year we published the first set of national diagnostic reference levels for adult computed tomography (CT) protocols in collaboration with the Royal Australian and New Zealand College of Radiologists, the Australasian College of Physical Scientists and Engineers in Medicine, the Australian and New Zealand Society of Nuclear Medicine and the Australian Institute of Radiography. The Diagnostic Reference Levels (DRLs) are important tools for driving optimisation of radiation protection of patients, as verified by successful implementation in a number of other countries, and the publication of Australian National DRLs thus represents an important milestone.

Ensure radiological and nuclear security and emergency preparedness

In 2011-12 we started the development of a new Incident Management Plan (IMP) taking into consideration our roles as a regulatory authority, adviser and IAEA-designated National Competent Authority on radiation emergencies both domestic and abroad. We also incorporated lessons learned after the Fukushima Dai-Ichi accident, recognising that the public and the government turned to ARPANSA for our nuclear safety, radiation health and emergency response expertise. ARPANSA continues to work closely with the Department of Health and Ageing National Incident Room and the Emergency Management Australia Crisis Coordination Centre in the further development and harmonisation of the IMP, which will support a seamless whole-of-government response to radiation and nuclear incidents and emergencies.

Develop and implement regulatory systems

ARPANSA was restructured in May 2011 to ensure better and more effective delivery of all its services, including activities related to compliance and enforcement. This includes the formation of a new Safety Analysis Section focusing on promoting safety culture.

ARPANSA has reviewed its compliance and enforcement policy in order to more effectively support a graded, proportionate response to inspections and minor licence non-compliances. ARPANSA is aiming at supporting licence holders to be more holistic and focused on safety outcomes. In November 2011, ARPANSA posted inspection reports on our website for the first time and initial feedback from licensees indicated strong support for this initiative.

ARPANSA introduced a new *Compliance and Enforcement Policy and Regulatory Guide: Graded Response to Non-Compliance*. When non-compliance is identified, the regulatory response will be commensurate with its severity. ARPANSA will use the minimum response necessary to achieve the desired result, which, in most cases will be a return to compliance.

ARPANSA inspector training, including evidence gathering, has been strengthened which may be particularly relevant to investigations of the kind referred to above.

On 13 March 2012, ARPANSA signed a Memorandum of Understanding with Comcare, the Commonwealth agency responsible for workplace safety, rehabilitation and compensation, to support a more integrated approach to the regulatory oversight of many of our licence holders on the basis of both the *Work Health and Safety Act 2011* and the ARPANS Act.

ARPANSA has reviewed its handling of and guidelines for confidential informants which can be viewed on our website at www.arpansa.gov.au/RadiationProtection/ReportingASafetyConcern.cfm.

A condition of the operating licence for ANSTO's OPAL reactor is the requirement for ANSTO to conduct periodic safety reviews which are assessed by ARPANSA. The OPAL reactor was due for periodic safety review in the final quarter of 2011 and ARPANSA commenced this review in December 2011. In February 2012, ARPANSA corresponded with ANSTO providing feedback from its initial review of the OPAL Periodic Safety Review. In addition, ARPANSA requested further information be provided to support this process. ANSTO then provided ARPANSA with a list of corrective actions to be undertaken at OPAL as a result of the this process. ARPANSA is currently reviewing the corrective action list provided.

The Periodic Safety Review will re-examine the safety of the OPAL reactor taking into consideration operating experience since being commissioned and international best practice. Apart from submitting the Periodic Safety Review to ARPANSA, ANSTO is also required to seek international peer review.

In relation to nuclear security, in January 2012, ARPANSA and Australian Safeguards and Non-Proliferation Office jointly created a working group to review the ANSTO Periodic Physical Protection and Security Review submission which will be benchmarked against the IAEA Nuclear Security Series and the ARPANSA Radiation Protection Series No. 11 *Code of Practice for the Security of Radioactive Sources* (2008). This review is continuing.

Licensing activities

During this financial year, ARPANSA approved an application under Regulation 51 of the ARPANS Regulations made by ANSTO to move to a strategy which provides for more efficient and flexible fuel utilisation for the OPAL reactor.

An independent inspection of the ARPANSA Medical Radiation Services laboratories at Yallambie was undertaken by Queensland Health inspectors. No non-compliances with licence conditions were found and a number of recommendations for improved safety and security practices were made. A summary inspection report will be posted on the ARPANSA website when it is finalised.

In 2011, ARPANSA issued a facility licence to ANSTO to operate the 18 MeV cyclotron at Camperdown, New South Wales.

Staff development

In June 2012 ARPANSA's Senior Management Committee commenced an Executive Level Development Program designed to expand

ARPANSA radiochemist placing a food sample into the Germanium Gamma Ray spectrometer to measure radioactivity.

Photo by Joerg Lehmann

opportunities for executive level staff to develop management skills through strategic level work and to develop research, negotiating and communication skills in an environment outside the normal roles. This program will consider our research agenda, our graduate development program, as well as ARPANSA's commercial activities.

Corporate planning

In May 2012, ARPANSA finalised its *Strategic Directions 2012-2016* document which was prepared using an agency-wide collaborative process. Our Strategic Directions document identified community outcomes in ten key areas with a series of strategies to achieve them. This document then became the foundation for the 2012-2013 Corporate Plan which identified all the activities aimed at achieving the outcomes and KPI's and targets to measure performance.

In June 2012, we introduced improved arrangements for performance setting and monitoring. Each quarter we will monitor progress against targets in our Corporate Plan, evaluate our risk control measures and internal audit recommendations, and revise our plans as required.

We will continue to strive for improved openness and transparency with a view to further improving our engagement with stakeholders through a program of key events, and make more of our regulatory decisions and interactions with licensees publicly available. In doing so, we hope to demonstrate that our regulatory decisions are balanced, consistent, transparent, substantiated and evidence-based, and that ARPANSA is operating effectively and efficiently in the interests of the Australian public and the Government.

Financial report on performance

Financially, ARPANSA reported an operating deficit of $2.39m for the financial year.

We incurred $3.08m in expenses not requiring appropriation in the budget year. This amount was made up of $2.54m in depreciation and amortisation expenses with the balance made up of an increase to the revaluation of long service leave provision as a result of the government's change to the bond rate.

The agency continues to review the efficiency and effectiveness by which it delivers its program to the Australian people to ensure that we operate within our financial constraints.

We also invested $5.34m to complete the renovation of the Yallambie facility along with the purchase of new and replacement scientific and computer equipment.

Our cash holdings continue to be at levels required to support current resourcing requirements to achieve the agency's strategic objectives.

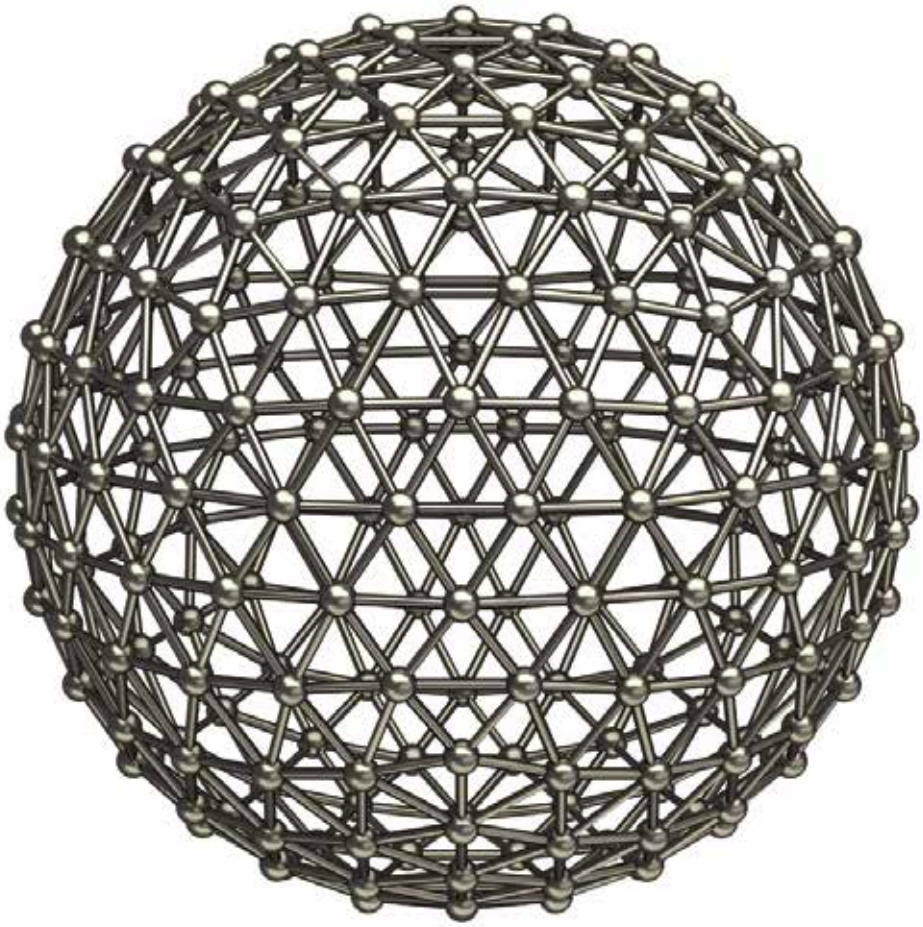
There have been no developments since the end of the financial year that have affected or may significantly affect the agency's operations or financial results in the future.

Outlook for 2012-13

I intend to take every opportunity to work closely with my staff to continue to deliver a professional service based upon our commitment to first class and well managed science, creativity and innovation, ensuring a robust safety culture, cooperation, good management and perceptive leadership with open and transparent processes and a consistent approach to regulation. Significant activities planned for the coming year include the following:

- Further work on good regulatory practice including finalising implementation of the IRRS review recommendations and taking further action to improve our processes for compliance and enforcement.
- Developing and implementing ARPANSA's Incident Management Plan to document and strengthen the operational, technical and communications elements for ARPANSA's response to radiological or nuclear emergencies.
- Continuing to coordinate the international analysis of public health and environmental effects resulting from the Fukushima accident, as part of the larger evaluation of the accident performed by UNSCEAR.
- Finalising the *Draft Regulatory Guide: Licensing of Radioactive Waste Storage and Near-Surface Disposal Facilities* to provide Commonwealth licensee applicants with guidance on the application process for a radioactive waste disposal facility or a radioactive waste storage facility.
- Preparing for a licence application for upcoming interim storage arrangements by ANSTO and later on in relation to the national radioactive waste management facility.
- Further development of the Australian Clinical Dosimetry Service full range of audit capabilities and assisting in the review of the program to determine future directions for clinical dosimetric audit in radiotherapy. This work involves extensive consultation with the Department of Health and Ageing and professional organisations as well as all of the radiotherapy clinics throughout Australia.
- Expanding work on diagnostic reference levels to new modalities which provide a tool for radiological facilities to assist in their cycle of quality improvement and educating all of the participants in radiology in the importance of optimising the procedures.
- Transitioning from indirect Cobalt-60 calibration to direct mega-voltage calibration based on the ARPANSA medical linear accelerator to improve dosimetric accuracy and patient outcomes from radiotherapy.
- Supporting the Therapeutic Goods Administration (TGA) by maintaining facilities for radiopharmaceutical quality control in the event of an incident involving these products and evaluation of new radiopharmaceutical products in support of the TGA.
- Establishing national clearance levels for release of radioactive materials from regulatory control and develop guidance for protection of the environment from the harmful effects of radiation.
- Continuing the Periodic Safety Review as well as the Periodic Physical Protection and Security Review of OPAL.
- Developing a plan for an extension of the national dose register to cover jurisdictions and workers other than those involved in uranium mining and milling.
- Continuing the assessment of scientific literature and guidance on exposure to extremely low frequency electromagnetic radiation, magnetic fields and radiofrequency electromagnetic radiation, revitalising stakeholder consultation in this area and revising standards as necessary.

Part 2: Agency Overview



Agency overview

The Chief Executive Officer (CEO) of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a statutory office holder under the *Australian Radiation Protection and Nuclear Safety Act 1998* (ARPANS Act). The ARPANS Act allows the CEO to engage staff to assist the CEO perform his statutory functions. Together, the CEO and staff constitute a statutory agency for the purposes of the *Public Service Act 1999* and a prescribed agency under the *Financial Management and Accountability Act 1997* within the Health and Ageing portfolio. The Parliamentary Secretary to the Minister for Health has ministerial responsibility for ARPANSA.

The CEO has statutory responsibility to make regulatory decisions in relation to facilities and controlled material and apparatus of Australian Government departments, agencies, statutory authorities, bodies corporate, government business enterprises and Commonwealth contractors and to provide advice and services consistent with the protection of the health and safety of people, and the protection of the environment, from the harmful effects of radiation.

The Radiation Health and Safety Advisory Council (the Council), the Radiation Health Committee (RHC) and the Nuclear Safety Committee (NSC) established by the ARPANS Act provide advice to the CEO. The Council identifies emerging issues relating to radiation protection and nuclear safety, examines matters of major concern to the community in relation to radiation protection and nuclear safety, and advises on the adoption of recommendations, policies, codes and standards in relation to radiation protection and nuclear safety.

The RHC advises on matters relating to radiation protection, including formulating draft national policies, codes and standards for consideration by the Commonwealth, states and the territories.

The NSC advises on matters relating to nuclear safety and the safety of controlled facilities, including developing and assessing the effectiveness of standards, codes, practices and procedures.

Role and functions

ARPANSA is the national centre for excellence in radiation protection and nuclear safety. The agency:

- promotes uniformity of radiation protection and nuclear safety policy and practices across jurisdictions of the Commonwealth, the States and the Territories
- regulates the Commonwealth's use of radiation and nuclear technology
- provides advice on radiation protection, nuclear safety and related issues
- undertakes research in relation to radiation protection, nuclear safety and medical exposures to radiation
- provides services relating to radiation protection, nuclear safety and medical exposures to radiation
- accredits persons with technical expertise for the purposes of the ARPANS Act
- advises the government and the community about radiation protection and nuclear safety
- undertakes scientific research and provides services in the field of radiation protection
- represents Australia in international forums that develop new principles and practices in radiation protection and nuclear safety.

Organisational structure

Offices and branches within ARPANSA

ARPANSA has six offices/branches with staff located at Miranda in New South Wales, Yallambie in Victoria, and Barton in the Australian Capital Territory.

The *Legal Office* includes Legal Advice and Corporate Compliance, with staff located in Sydney and Melbourne.

The *Corporate Office* includes Finance, People & Culture, Information Technology & Management and Technical Service, with staff located in Sydney and Melbourne.

The *CEO Office* includes Planning & Integration, Government & International Liaison, Project Coordination & Support, Communication & Education Support and Quality Management, with staff located in Sydney, Melbourne and Canberra.

The *Operations Services Branch* includes Security & Community Safety, Best Practice Regulation, Compliance & Enforcement and Safety Analysis, with staff located in Sydney and Melbourne.

The *Radiation Health Services Branch* includes Monitoring and Emergency Response, Environmental & Public Health, Non-ionising Radiation, Occupational Exposure and Personal Radiation Monitoring Service, with staff located in Melbourne.

The *Medical Radiation Services Branch* includes Diagnostic Imaging & Nuclear Medicine, Radiotherapy, and the Australian Clinical Dosimetry Service, with all staff located in Melbourne.

ARPANSA senior executive

CEO of ARPANSA – Dr Carl-Magnus Larsson

Dr Carl-Magnus Larsson commenced as Chief Executive Officer of ARPANSA in March 2010 with a background in chemistry and biology and a PhD in Botany from Stockholm University, Sweden. Prior to his appointment to ARPANSA, Carl-Magnus worked at the Swedish Radiation Protection Authority focussing on environmental aspects of nuclear power. Carl-Magnus coordinated the multinational European Commission-supported research projects FASSET and ERICA (both on environmental assessment and protection) between 2000 and 2007 and he has been a member of the Organization for Economic Co-operation and Development's Nuclear Energy Agency Radioactive Waste Management Committee (RWMC) and the chair of the RWMC-Regulators' Forum. He is vice-chair of Committee 5 of the International Commission on Radiological Protection and vice-chair of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). He is a member of the IAEA Commission on Safety Standards.

Legal Office – Acting Corporate Counsel, Martin Reynolds

Martin Reynolds was appointed as acting Corporate Counsel and Head of the Legal Office in August 2011. Prior to his current appointment, Martin was Corporate Governance Officer at ARPANSA since 2008. Martin has had many years experience in both legal and senior management roles in government statutory authorities. Martin was trained as a lawyer at Monash University and also holds a Bachelor of Business (Management) from the same university.

The Legal Office provides legal advice and strategic support to the agency with regard to all aspects of the agency's operations and to assist the CEO to achieve his statutory mandate. Using a client-focused approach, the Legal Office delivers agency specific legal advice as well as advice on developing legislation, codes and standards and national uniformity projects and specialised support to the development of regulatory guidance and material for ARPANSA's licence holders. The Legal Office also delivers accountability and assurance services to assist the agency to meet its obligations under applicable statutory frameworks and the Government's financial management frameworks. This includes internal audit, Work Health and Safety, Strategic Management Committee and Audit and Risk Committee support, Certificate of Compliance process and quality management.

Corporate Office – Office Head, George Savvides

George Savvides was appointed Head of the Corporate Office upon its creation in May 2011. He also holds the role of Chief Financial Officer. Prior to his current appointment, George had many years experience in senior Finance roles in both the private and not-for-profit sectors, including Oakton Limited, Melbourne Football Club, Melbourne Health, Powercor Telecommunications and Ansett Australia. George is a Certified Practicing Accountant with an MBA from the Australian Graduate School of Management.

ARPANSA's Corporate Office is responsible for providing support to ARPANSA's key activities by creating the most effective environment enabling and encouraging excellence in research, policy, advice, regulation and the utilisation of knowledge. Corporate Office is made up of Finance who manage the agency's financial transactions to ensure compliance with the *Financial Management and Accountability Act 1997*. Information Management delivers ARPANSA's computer

network, telecommunications, database/ system development, records management, library services, web support, publications and multimedia production. People & Culture manage ARPANSA's recruitment, pay and conditions for staff, including workplace policies and our enterprise agreement. It also develops training programs, workforce planning and advice regarding people management practices. Technical Services provides mechanical/ electronic engineering support to the agency and is responsible for ensuring the maintenance of the Yallambie property facility.

CEO Office – Acting Office Head, Ian Graham

Ian Graham was appointed Acting Head of the Office of the CEO in August 2011 when the Office was established. Ian joined ARPANSA in 2007 as Manager, Regulatory Systems and has acted as Branch Head, Regulatory & Policy Branch and later Operations Services and Branch Head for Corporate Services Branch for extended periods. Ian has a long regulatory background and was formerly the CEO of the Office of the Chief Electrical Inspector in Victoria and a non-executive Director of the National Standards Body, Standards Australia. Ian is a fellow of the Institution of Engineers Australia and of the Australian Institute of Company Directors.

The CEO Office is responsible for agency-wide facilitation of planning and coordination, liaison with Government and other major stakeholders, international liaison, risk and project management and the establishment of a quality framework. It is also responsible for managing ARPANSA's external communications, public relations and educational activities and internal communications at a strategic corporate level. The CEO Office is the point of contact with the Parliamentary Secretary for Health and Ageing and the Portfolio Department to ensure that ARPANSA's advice is timely and relevant. The CEO Office also routinely engages with our stakeholders and manages media inquiries.

Operations Services – Branch Head, Martin Dwyer

Martin Dwyer was appointed as Branch Head of Operations Services in August 2011. Prior to his current appointment, Martin was an engineer with a career in the teaching hospital system which culminated in his role as Director of Biomedical Engineering and Medical Physics at Canberra Hospital. Martin has extensive experience with Australian Standards and currently chairs the Accreditation Board for Standards Development Organisations and was previously a member of Standards Australia's Council. He has also held significant roles in professional organisations, including as chair of the College of Biomedical Engineers and as Director, Engineering Practice with Engineers Australia.

The Operations Services Branch is responsible for Commonwealth regulatory activities including licensing, compliance, inspection and enforcement.

The branch is responsible for assessment of incidents and accidents, as well as normal licence holder operations, from technical, managerial, human and organisational perspectives, and an incident register is maintained to support such analyses. Operations Services is ARPANSA's principal driver for establishing a uniform regulatory framework across all jurisdictions, through the Radiation Health Committee. It also supports the Radiation Health & Safety Advisory Council and the Nuclear Safety Committee. Security and Community Safety also fall within the responsibility of the branch. In this area, as in other areas of responsibility, the branch collaborates with other branches and offices as appropriate.

Radiation Health Services – Acting Branch Head, Stephen Solomon

Stephen Solomon has been Acting Branch Head of Radiation Health Services since its creation in May 2011. Prior to his current appointment, Stephen was Manager Health Physics Section, Envrionmental and Radiation Health

Branch, ARPANSA. Stephen has a PhD in Nuclear Physics and has over thirty years experience in health physics and radiation protection. He leads and coordinates ARPANSA activities as a World Health Organization (WHO) Collaborating Centre for Radiation Protection and as a member of WHO Radiation Emergency Medical Preparedness & Assistance Network. Stephen is currently the Leader of Expert Group C (Assessment of doses and risk to humans and biota) and a member of the Coordination Expert Group for the UNSCEAR assessment *Levels and Effects of Radiation Exposure due to the Nuclear Accident after the 2011 Great East Japan Earthquake and Tsunami*.

Radiation Health Services Branch ensures the protection of the public, workers and the environment from natural and man-made sources of ionising and non-ionising radiation by:

- maintaining systems for the measurement of radioactivity in people and the environment and works to develop frameworks for the radiation protection of the environment and associated public health
- supporting Australian radiation emergency preparedness and response to nuclear radiological emergencies
- monitoring and providing advice on population exposures to non-ionising radiation by measuring personal and occupational exposure to solar UVR, artificial UVR sources, electricity (ELF) and radiofrequency (RF) radiation
- advising on radiation protection for occupational health and safety exposure from man-made and naturally occurring ionising radiation
- providing a Personal Radiation Monitoring Service to monitor the exposures of workers in the medical, dental, chiropractic, industrial and mining fields to ionising radiation.

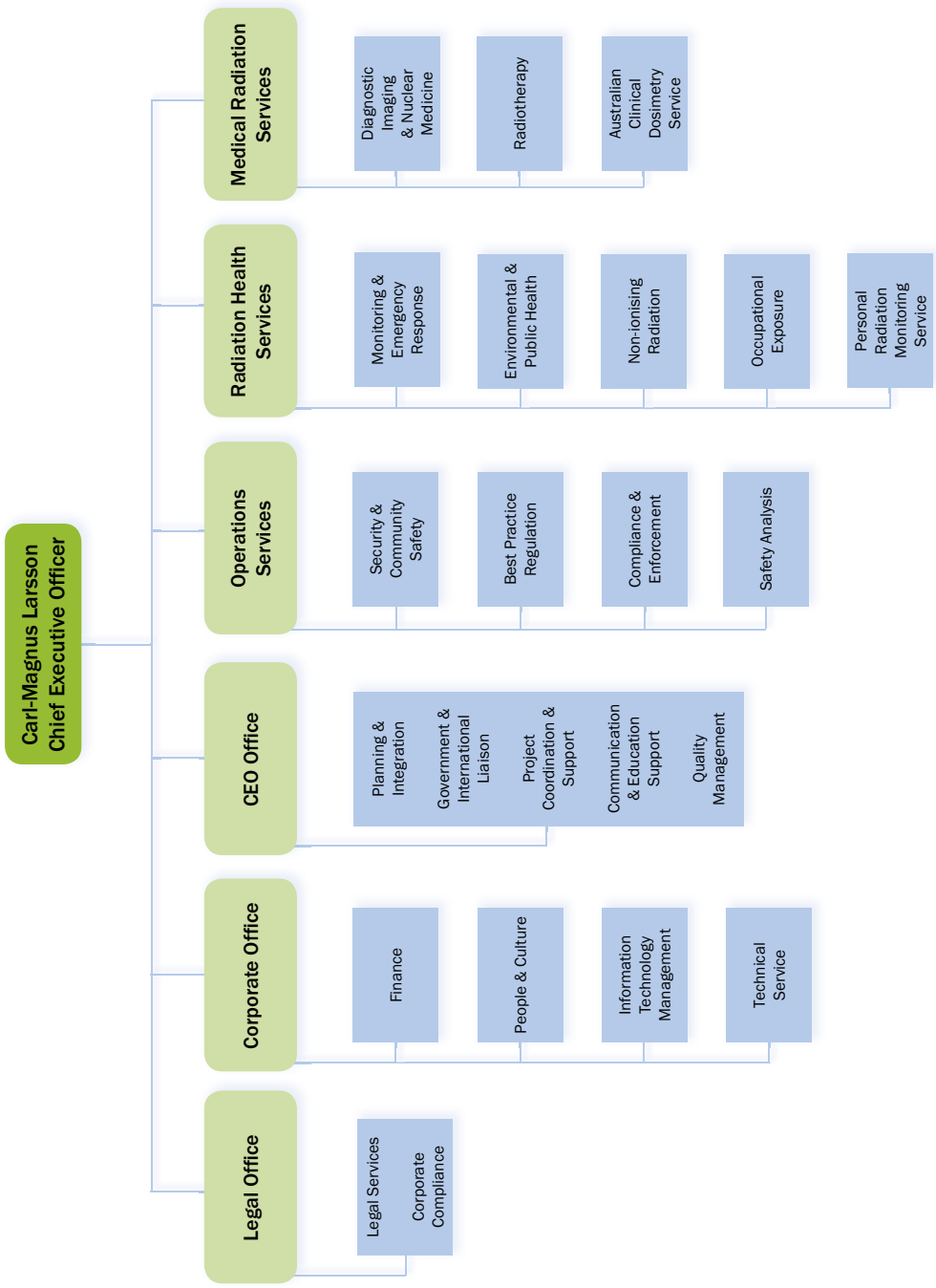
Medical Radiation Services – Branch Head, Peter Johnston

Professor Peter Johnston was appointed as Branch Head of the Medical Radiation Services Branch upon its creation in May 2011. Prior to that Peter was Branch Head of ARPANSA's Environmental and Radiation Health Branch since 2009. Peter worked at Royal Melbourne Institute of Technology (RMIT) for 20 years commencing as a Lecturer, progressing to become Professor of Applied Nuclear Physics in 2001 and Head of Physics in 2003; he remains an Adjunct Professor at RMIT. During this period, Peter had several ministerial and government appointments and was a member of the Uranium Mining, Processing and Nuclear Energy Review in 2006. Peter first joined the Australian Radiation Laboratory at Yallambie (now ARPANSA) in 1979 and worked in Radioactivity Standards, Environmental Radioactivity and Health Physics for ten years. Peter has extensive experience in providing advice on environmental radiation matters including the contamination and rehabilitation of Maralinga, radiation protection issues in uranium mining as well as in the medical use of radiation.

Medical Radiation Services Branch is responsible for radiation protection in medicine and its mandate is based on the idea that all procedures involving radiation exposure of patients must be justified so that the procedure is appropriate in relation to alternatives and is likely to be beneficial to the patient. Medical Radiation must also be optimised to ensure that the procedure is implemented with minimal dose (diagnostic imaging) or harm (therapy) to the patient while maintaining efficacy. The work of this branch focuses upon the following outcomes:

- That radiotherapy delivers the correct dose to the correct location and spares other tissues.
- That clinically adequate images which beneficially affect patient management are generated with minimal dose.
- The importance of effective communication and interaction between ARPANSA, state and territory agencies, medical profession and other professional bodies, patients and carers.

Figure 1: Organisation Chart



Our people

At 30 June 2012 ARPANSA employed a total of 153 staff. An organisation chart is provided at Figure 1.

Outcome and program structure

For the 2011-12 budget year, ARPANSA's activity, resource and performance reporting fell under the outcome – Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, services and regulation.

The stated major activities contributing to the program reported in the Portfolio Budget Statements 2011-12 aim to:

- protect the public and environment from radiation exposure
- limit workers' exposure to radiation
- promote the effective use of ionising radiation in medicine
- ensure radiological and nuclear security and emergency preparedness
- develop and implement regulatory systems; and
- ensure compliance with regulation.

A report on the planned performance against these activities is provided in Part 3 of this report.

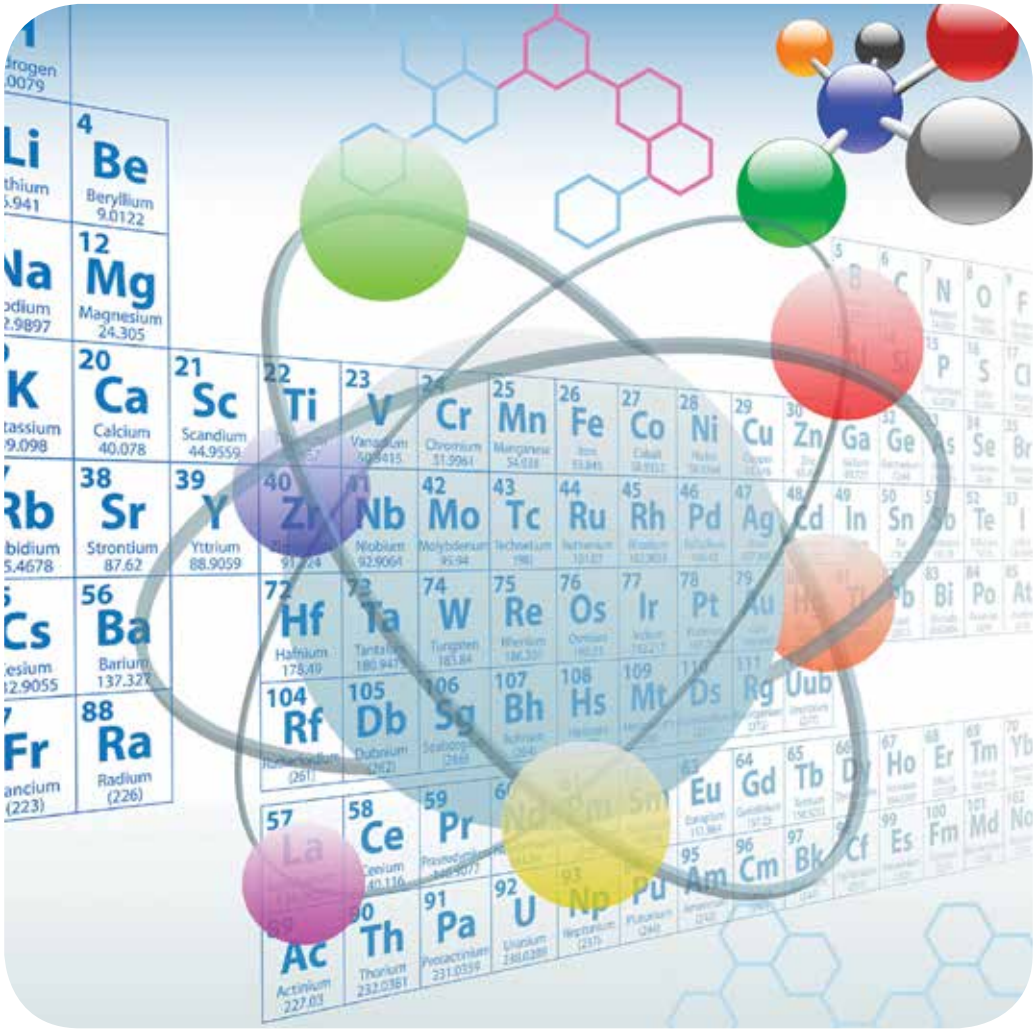
Stakeholder engagement

ARPANSA has a broad range of stakeholders across various sections of the community. We partner with and provide services and products for an extensive range of Commonwealth, state and local government departments and agencies, including those associated with radiation protection, nuclear safety, emergency management and medical exposures to radiation. The general public is one of our key stakeholders and in this financial year, we consulted the public on issues including the safe use of lasers in schools and the safe transport of radioactive materials. Table 1 sets out our stakeholder engagement activities for 2011-12.

Table 1: Stakeholder Engagement

Date	Stakeholder Engagement
July-Sept 2011	ARPANSA established a joint working group with the Australian Safeguards and Non-Proliferation Office and other relevant Commonwealth agencies in order to develop and assess the protective security criteria (licence requirements) for the periodic safety review of the OPAL Research Reactor.
August 2011	ARPANSA released a draft safety guide on the use of lasers in schools for public consultation on its website.
October 2011	ARPANSA staff attended the Australasian Radiation Protection Society with presentations on naturally occurring radioactive materials, monitoring, modelling and dose assessment and Australia's response to the Fukushima Dai-ichi accident.
November 2011	ARPANSA's 6th Licence Holder Forum with the topic of 'Holistic safety assessments' held at Victoria Barracks, Department of Defence, Melbourne and attended by 15 licensee organisations.
November 2011	ARPANSA begins publishing inspection reports on the ARPANSA website for the first time receiving strong support from licensees.
February 2012	ARPANSA released a draft safety guide on approvals for the safe transport of radioactive materials for public consultation on its website.
March 2012	ARPANSA hosted a seminar on the Japan Nuclear accident at Australian Federal Police Headquarters in Canberra which was well attended by key Commonwealth agencies.
March 2012	ARPANSA and the Department of Resources, Energy and Tourism jointly sponsored an Environmental Risk from Ionising Contaminants: Assessment and Management Workshop held in Melbourne and Perth which was well attended by Commonwealth agencies, state regulators and industry.
April 2012	ARPANSA hosted a meeting of the Electromagnetic Energy Reference Group which included representatives from community groups, industry and government to discuss the health impact of electromagnetic radiation from telecommunication sources.
June 2012	The CEO of ARPANSA delivered a presentation to Sutherland Shire Council describing ARPANSA's roles and responsibilities as a Commonwealth regulator of radiation sources, facilities and nuclear installations which focused upon the expected application by the Australian Nuclear Science and Technology Organisation for the siting and construction of an interim radioactive waste store to be built at Lucas Heights for the return of waste from spent fuel reprocessing in 2015 from the United Kingdom and France.
June 2012	ARPANSA presented an update on work programs for radiation protection of the environment to the Uranium Council meeting held in Adelaide and reported that stage one of the project *Concentration Ratios for Non-Human Biota inhabitating Australian Uranium Mining Environments* has been completed.
June 2012	The first annual Australian National Radiation Dose Register workshop held in Adelaide and attended by key stakeholders including uranium industry representatives, Commonwealth/state/territory regulators and other industry experts to discuss progress, methodologies used for radiation dose assessments and plans for improvement of the Dose Register.

Part 3: Report on Performance



Protect the public and environment from radiation exposure

ARPANSA, on behalf of the Australian Government, undertook a range of activities aimed at improving knowledge about the levels and exposure arising from radiation in the environment, and providing guidance and advice to industry and the public on how best to minimise these exposures.

ARPANSA has the capacity to determine the levels and quantities of radioactivity in environmental samples and in people exposed to radioactivity, to allow the assessment of the impacts of radioactive material on the public and the environment. ARPANSA maintains an accredited Environmental Radiochemistry Laboratory for the accurate measurement of radionuclides in environmental samples, facilities for the calibration and testing measurement systems for the assessment of public and worker exposure from airborne radioactivity as well as systems for the assessment of radioactive material in the body.

During the year, the Radiochemistry Laboratory provided a range of commercial services, successfully participated in proficiency testing programs, and provided laboratory services for the screening of food samples from Japan as part of the Agriculture, Fisheries and Forestry Imported Food Program. It also undertook the analysis of samples collected from selected metal mines, collieries, and quarries in NSW, to assess the levels of naturally occurring radioactive materials (NORM) in these locations.

Locally, ARPANSA commenced work on the analysis of naturally occurring radionuclides in Australian food samples in order to estimate the background radiation dose contribution from foods in the typical Australian diet.

As part of the Maralinga Land and Environment Management Plan and under a Memorandum of Understanding with the Australian Government, Department of Resources, Energy and Tourism, ARPANSA completed and reported on radiological surveys and a reassessment of the health impact on local peoples, of radionuclide contamination from historical British nuclear weapons testing at Maralinga. Oak Valley is a remote aboriginal community located on the southern fringe of the Great Victoria Desert on Maralinga Tjarutja Lands in South Australia. In May 2012 ARPANSA reported to the community that the health impacts from the remediated weapons testing sites was assessed as negligible for the Oak Valley community and that the current restrictions on full time living in the Taranaki restricted area at Maralinga were still appropriate.

Test Site Maralinga

Ultraviolet radiation (UVR) protection

Through its solar ultraviolet radiation (UVR) programs, ARPANSA continues to monitor public exposure to solar UVR to improve understanding of ways to reduce UV exposure. The ARPANSA UVR monitoring network continued to provide real-time 'live' UV Index data for ten Australian sites and three Antarctic bases via the ARPANSA website. The UV Index data (which is updated every minute) is made available to mobile phone users through third-party applications. The ARPANSA website also describes protective strategies for avoiding excessive sun exposure. Research projects measuring the UVR exposures of outdoor workers were carried out in collaboration with the Cancer Council Victoria and with the Australian National University for indoor workers.

ARPANSA continues to work within the UV Alert Group (includes the Cancer Councils from every state, Bureau of Meteorology and more recently NZ Cancer Council and NZ Health Sponsorship Council) which meets 4 to 6 times a year to improve the delivery of UV Index measurements and information as part of the sun protection message. ARPANSA as

a World Health Organization (WHO) Collaborating Centre for Radiation Protection continues to participate in the WHO Intersun (UVR) project. The WHO Intersun Project provides sound scientific information and practical advice on the health impact and environmental effects of UVR exposure and encourages countries to take action to reduce UVR-induced health risks and guidance about effect sun awareness programs. In June 2012, ARPANSA attended the annual international advisory committee Intersun UV meeting in Geneva and reported on ARPANSA's current UVR work programs.

Occupational exposure - UVR

ARPANSA's Radiaion Protection Standard covers exposure to UVR incurred as part of a worker's occupation and includes both solar and artificial sources of UVR. The Standard protects workers by limiting the occupational exposure to UVR from artificfical sources in the workplace, considered to be a controlled environment; and setting requirements for minimising a person's exposure to uncontrollable sources of UVR, such as the sun. While mandatory application of the limits for exposure to solar UVR to outdoor workers is difficult in practice, it is important to limit UVR exposures using engineering and administrative controls as well as personal protection.

Monitor population exposures to electric and magnetic fields and electromagnetic radiation (EMR)

ARPANSA continued to engage in EMR activities including the provision of scientific advice and guidance to the public and the government on exposure to electromagnetic radiation from electrical power infrastructures, mobile phone base stations and handsets and other sources from new technologies such as smart meters. This has involved the ongoing analysis of scientific studies on the potential adverse health effects of exposure to electric and magnetic fields and radiofrequency electromagnetic radiation, to ensure that ARPANSA

Regulation of the solaria industry is the responsibility of each state or territory.

ARPANSA has developed nationally agreed regulatory elements for solaria which are outlined in the National Directory for Radiation Protection and includes banning solaria use by persons under 18 and those with very fair skin (skin type I). These elements, along with ARPANSA's mandatory online training for solaria operators, have now been implemented across all jurisdictions.

Qualitative Deliverable	
Devise protection and exposure reduction strategies to reduce harmful effects of UVR exposure	
Measure	Standards and guides are developed and published in a timely manner.
Result	UV protection information provided to the public on the ARPANSA website in the form of fact sheets and other publications.

Qualitative Key Performance Indicators	
Increase the public awareness about the risk of exposure to UVR.	
Measure	Achieve a high level of awareness of risk of UVR exposure and strategies for protection (measured by survey).
Result	ARPANSA UVR monitoring network continued to provide real-time 'live' UV Index data, with UV protection information provided to public through ARPANSA website, fact sheets and other publications. Demand for ARPANSA fabric UV testing and use of ARPANSA UV Protection Factors tags continues.

Quantitative Deliverable	2011-12 Budget Targets	Actual Achieved
Number of Australian cities provided with live UV index readings.	*10*	*10*
Number of reports, publications and presentation of surveys and assessments of public exposure and occupational exposure to natural sources of radiation.	>10	19
Number of reports, publications and presentations on public exposure to electric and magnetic fields and electromagnetic radiation.	>5	8

ARPANSA maintains a network of dataloggers situated in major Australian cities and in the Australian Antarctic territories which continuously record the solar ultraviolet radiation (UVR) levels at each site. UV index data is taken from three sites in the Antarctic – Casey, Davis and Mawson to advise workers of their daily exposure.

Communication between a mobile phone and the nearest base station is achieved by radiofrequency (RF) electromagnetic fields.

ARPANSA fields numerous public inquiries about mobile phone use including concerns about the level of radiofrequency (RF) emissions to which the brain may be exposed and potential health consequences, particularly brain cancer. ARPANSA continues to gather information on actual exposure levels and provides this to the public together with facts about the underlying science.

guidance is consistent with world's best practice and new scientific developments.

ARPANSA also continues its base station survey program to inform the public about actual exposures in close proximity to mobile phone base stations and validate mathematical predictions. During the present year, ARPANSA undertook three mobile base station surveys and the results have been published on the ARPANSA website. ARPANSA as a WHO Collaborating Centre participates in the WHO International Electromagnetic Fields Program, and in June 2012 ARPANSA chaired the Annual International Advisory Committee meeting of the WHO International EMF project in Geneva.

Extremely low frequency (ELF) electric and magnetic fields project

In March 2011 the Radiation Health Committee (RHC) decided to cease development of an ELF Standard and redraft the document as Guidelines. A significant amount of revision work has since been undertaken. In November 2011, the RHC assessed the draft *ARPANSA Guidelines on Managing Exposure to Electric & Magnetic Fields — 0 to 3 kHz* and considered harmonisation with international ELF standards, in particular the 2010 International Commission on Non-Ionizing Radiation Protection (ICNIRP) *Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz to 100 kHz)*. The RHC recommended that the ARPANSA ELF Guidelines should implement as much of ICNIRP 2010 as relevant and appropriate. Further revision has resulted in a more mature draft closely aligned with ICNIRP 2010 and with a regulatory context appropriate for Guidelines. This document is nearing finalisation.

Radioactive waste safety

In Australia, the greatest volume of radioactive waste consists of materials with a low level of radioactivity or with a shorter half-life. These wastes are potentially able to be disposed of in a 'near-surface' repository.

Parallel to the recent passage of the *National Radioactive Waste Management Act 2012* ARPANSA developed a *Draft Regulatory Guide: Licensing of Radioactive Waste Storage and Near Surface Disposal Facilities* advising potential Commonwealth applicants on how to proceed to apply for a licence for a radioactive storage or disposal facility under the terms of the ARPANS Act. It also advises other stakeholders and the public of the issues that must be addressed by the applicant. It describes objectives for protection of human health and of the environment, drawing upon international best practice in relation to radiation protection and radioactive waste safety.

The Draft Regulatory Guide is currently undergoing a public consultation process due for completion in September 2012 and a mature draft of the document is posted on ARPANSA's website at www.arpansa.gov.au/Publications/drafts/dr_waste.cfm.

This draft Guide is intended to supersede ARPANSA's 2006 regulatory guide for radioactive waste management, which was due for revision in light of both local and international experience. This Regulatory Guide has been prepared by our specialists in radiation waste in consultation with international peers and key stakeholders. It has been reviewed by ARPANSA's Nuclear Safety Committee, which along with scientific expertise, also has community, industry and government representatives.

The Regulatory Guide is directed to Commonwealth entities applying for a licence under the ARPANS Act to prepare a site for, construct, operate, and decommission or close a storage or disposal facility for radioactive waste; and to other stakeholders including the public, to:

- advise of the regulatory issues and to assist in understanding how the application will be assessed by the regulatory body, and what the overarching statutory considerations are

Qualitative Deliverable	
Develop new guidance for radioactive waste disposal based on existing international frameworks.	
Measure	Publish regulatory guidance on the management of radioactive waste.
Result	ARPANSA's draft regulatory guide: *Licensing of Radioactive Waste Storage and Near Surface Disposal Facilities* was developed and published on our website.

Mobile phone base stations

Public exposure levels from mobile phone base stations are typically hundreds of times below current exposure limits.

Electric and Magnetic Fields – Powerlines

Electrical power distribution and use generates both electric and magnetic fields which in Australia are generated at a frequency of 50 hertz (Hz) (number of oscillations per unit time), and are referred to as extremely low frequency (ELF) fields. The strength of the electric field depends on the voltage (typically 240 V for households) and is present near any live wire whether an electrical appliance is being used or not. At the present time there is no proven evidence that exposure to low level electric fields is a health hazard.

The scientific evidence does not firmly establish that exposure to 50 Hz electric and magnetic fields found around the home, the office or near powerlines is a hazard to human health. In view of epidemiological studies, however, the possibility remains that intense and prolonged exposures to magnetic fields may increase the risk of leukaemia in children.

Smart meters

Smart meters measure electricity usage and communicate this information back to the electricity supplier using short bursts of radio waves and ARPANSA often receives public inquiries about the potential health effects of smart meters.

The overall exposure from smart meters is very low and well below ARPANSA exposure limits, even when a number of devices are communicating simultaneously. Typical exposure to an individual from a smart meter is many thousands of times less than the localised exposure to the brain from a mobile phone handset. ARPANSA works through the Radiation Health Committee to deliver national uniformity of radiation regulation; monitor the science around electromagnetic energy and provide advice on any associated health issues to the public.

- assist in understanding the requirements for the content of an application and to address the questions 'what is required?' and 'when (at what stage) is it required?' in the application process
- provide guidance based on national and international best practice for meeting the requirements and to help in striving to achieve high levels of safety.

The CEO may only make a positive decision to issue a licence authorising an applicant to carry out a 'conduct' related to a storage or disposal facility if an applicant demonstrates that the proposed facility will achieve this level of protection. They will do this by carrying out and presenting a 'safety case' that draws upon the organisational and technical arrangements put in place, the nature of the waste to be accepted, the characteristics of the site, the design of the facility, including engineered barriers, and the arrangements for its construction, operation, decommissioning or closure and post-closure stages as appropriate.

A working group has been established to begin revision of the National Health and Medical Research Council *Code of practice for the near-surface disposal of radioactive waste in Australia (1992)* (RHS 35), and the information in the updated *Draft Regulatory Guide: Licensing of Radioactive Waste Storage and Near Surface Disposal Facilities* will form the basis for the revision.

Radiological protection of the environment

Recent international recommendations explicitly makes the radiological protection of the environment part of international best practice and recommends the use of reference animals and plants for radio-ecological impact assessments. There is currently no consolidation of existing Australian data on concentration ratio to support non-human biota radiological assessments in the Australian uranium mining context which impedes the ability of the industry to undertake assessments.

ARPANSA is currently working to implement an improved framework for environmental impact assessment for uranium mining and radioactive waste disposal, to ensure that measures to protect people and the environment are adequate and maintained. The framework is aligned with the system for environmental radiation protection that has been developed by the ICRP taking into account recent international research projects.

In March 2012 ARPANSA and the Department of Resources, Energy & Tourism co-sponsored an Environmental Risk from Ionising Contaminants: Assessment and Management (ERICA) Workshop in Melbourne and Perth. The ERICA Tool is a software system that applies the tiered ERICA Integrated Approach to assessing the radiological risk to terrestrial, freshwater and marine biota. The objective of the Australia-focused workshops was to help attendees improve their knowledge and understanding of issues surrounding radiological protection of the Australian environment, and provide instruction on the use and benefits of the ERICA tool in conducting environmental assessments. Commonwealth agencies, state regulators and industry attended the workshop.

In December 2011, ARPANSA commenced the project, Concentration Ratios for Non-Human Biota inhabiting Australian Uranium Mining Environments which is partly-funded by the Department of Resources Energy and Tourism. The objective of the 12 month project is to collate existing Australian data holdings on concentration ratios for flora and fauna in uranium mining environments. Currently, industry engagement and collation of concentration ratio data has been completed. Data is currently undergoing quality checks and evaluation to identify short-comings, including biota types and environmental conditions, for which data is most

Qualitative Deliverables	
Develop a new national framework for the protection of non-human species and develop methodologies for the assessment of environmental impacts using the ERICA framework and tool	
Measure	Agreement of industry and governments to the framework and assessment methods developed.
Result	This two year program is on track for completion in the third quarter of 2013.

lacking. These concentration ratio data holdings can be applied for radiation protection of the environment in various climate zones of Australia. Their inclusion within the ERICA tool (combined with the guidance provided by the Safety Guide described below) will enable the most up-to-date organism- and site-specific radiological assessments to be undertaken. The table on page 33 notes that the project is on track for completion in the third quarter of 2013.

ARPANSA's *Safety Guide on the Monitoring and Assessment of Doses in the Mining and Milling of Radioactive Ores* is intended to promote a nationally consistent approach to monitoring, assessing and recording occupational exposures to radiation for mining and mineral processing operations. It is a companion volume to the *Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing* (the Mining Code), which was published in 2005. The Mining Code provides a uniform framework for radiation protection and radioactive waste management, including information and guidance to assist in development of a radiation management plan and a radioactive waste management plan.

Comprehensive Nuclear-Test-Ban Treaty

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) bans all nuclear explosions, whether they are for civil or military purposes. To monitor compliance with the CTBT, an International Monitoring System (IMS) is being established. As a signatory to the CTBT, Australia is committed to establish, operate and maintain nine air monitoring facilities which form part of the IMS. ARPANSA continued to operate and maintain radionuclide air monitoring stations at Melbourne, Perth, Townsville, Darwin, the Cocos Islands, and Macquarie Island, Australia, including two noble gas analyser facilities, collocated with the air monitoring stations in Melbourne and Darwin. The installation of the ninth and final radionuclide air sampling station at Mawson Base (Antarctica) is essentially complete.

In addition to operating the stations, ARPANSA also operates the Australian CTBT Radionuclide Laboratory (CRL), which has the role of testing samples obtained by other CTBT radionuclide monitoring stations, and a CTBT National Data Centre that provides advice to the Australian Safeguards and Non-Proliferation Office on any suspicious event detected on the IMS. Since being revalidated in October 2011 and thus returned to full service, the CRL has been operating at capacity levels analysing samples from the CTBT network. The CRL has also participated in a CTBTO Intercomparison Exercise.

Safe transport of radioactive material

The regulation of the transport of radioactive material throughout the world is based on requirements published by the International Atomic Energy Agency (IAEA). The Australian *Code of Practice for the Safe Transport of Radioactive Material (2008)*, Radiation Protection Series No. 2 (the Transport Code) adopts the IAEA's *Regulations for the Safe Transport of Radioactive Material 2005* Edition (No. TS-R-1) and establishes requirements for the safe transport of radioactive material in Australia.

Certification of radioactive sources, packages and certain types of transports is an important aspect of the Transport Code and once obtained, the certification needs to be recognisable by radiation regulators around the world. Australia is in the position of having many competent authorities, all of whom can provide certification. In order to assist

Qualitative Key Performance Indicator **Ensure radiological and nuclear security and emergency preparedness**	
Advice provided to the Australian Government regarding the radionuclide monitoring system and the Comprehensive Nuclear-Test-Ban Treaty is acceptable and reliable.	
Measure	Level of reliability meets the contractual arrangements between ARPANSA and the Comprehensive Nuclear-Test-Ban Treaty Organization.
Result	ARPANSA continued to operate and maintain the radionuclide air monitoring stations, including two noble gas analyser facilities in conformance with the contractual requirements.

Australian regulators and industry in interpreting the detailed provisions in the Transport Code and to facilitate compliance with the Transport Code ARPANSA has developed a draft *Safety Guide for Approval processes for the safe transport of radioactive materials 2012* (Radiation Protection Series No. 2.2). It explains the administrative and legal requirements for obtaining certification in the Australian situation, outlines what the competent authority does, and describes who a person needs to contact in order to achieve certification of packages, radioactive material and the shipment of radioactive material.

This Safety Guide was released for a period of public comment from 16 February to 23 March 2012. The working group reviewed the comments received and finalised the draft. The draft was ready for submission to the Radiation Health Committee and the Radiation Health and Safety Advisory Council for approval. Following approval, this document will be published on the ARPANSA website.

During 2011-12 ARPANSA validated the *Certificate of a Package Design USA/9315/B(U)-96*, revision 5, issued by the United States of America Competent Authority for a B(U) Type Package Design Es-3100. ARPANSA issued the following certificate of validation to ANSTO:

US/2012-44/B(U)F-96

ARPANSA also approved the shipment of OPAL fresh fuel and uranium targets in accordance with the requirements of the Transport Code.

International engagement

The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management (the Joint Convention)

During this financial year, ARPANSA submitted Australia's Fourth National Report to the Joint Convention. The Joint Convention focuses upon the safe management of spent nuclear fuel and radioactive waste with the objective of achieving and maintaining a high level of safety worldwide in spent fuel and radioactive waste management through a process of national reporting and peer review.

ARPANSA's report addressed questions relating to review of other Joint Convention Contracting Party reports and questions to Australia from the Contracting Parties were all answered according to the stringent timelines of the Joint Convention review process.

The Australian delegation to the review meeting was led by Professor Peter Johnson, Head of ARPANSA's Medical Radiation Services Branch. Australia's presentation to the Joint Convention review meeting was prepared and delivered in Vienna in May 2012 and it was well received by our international counterparts. Australia's National Report is available at www.arpansa.gov.au/Regulation/Collaborations/jointconv.cfm.

The Rapporteur's Report of the Joint Convention noted the following key achievements for Australia:

- Creation of an updated regulatory guide for waste management facilities.
- The *National Radioactive Waste Management Act 2012* has been enacted.
- The Periodic Safety Review for OPAL reactor is currently being undertaken.
- The decommissioning of Moata is now completed.

It also commended good regulatory practices across a range of areas including our:

- participation in Integrated Regulatory Review Service activities
- consideration of only volunteer sites for national radioactive waste management facility
- updated regulatory guidance for storage and disposal incorporating international best practice
- strong legislative requirements to comprehensive community and stakeholder consultation.
- provision of regional training and guidance in decommissioning of research reactors.

It did however conclude that there were a number of significant challenges ahead for Australia including:

- establishment of national radioactive waste management facilities for disposal of low-level waste (LLW) and the storage of intermediate-level waste (ILW)
- licensing for final dismantling of decommissioning of HIFAR
- engagement of public and stakeholder on decision making
- maintaining skills and expertise of regulator and operator

- development of national strategy for disposal of ILW
- interim storage required for ILW generated from reprocessing of spent fuel at ANSTO if a National Radioactive Waste Management Facility is significantly delayed
- establishing national clearance levels.

In October 2011, a national audit of radioactive waste holdings was completed and reported in the Joint Convention National Report. The data was added to the International Atomic Energy Agency database Net-Enabled Radioactive Waste Management Database which maintains records of all radioactive waste in storage or disposed of world-wide.

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR)

UNSCEAR was formed in 1955 to undertake scientific assessments of sources and effects of ionising radiation, and report its findings directly to the United Nations General Assembly. In May 2011 at the 58th UNSCEAR session a project plan was developed for an assessment of *Levels and Effects of Radiation Exposure due to the Fukushima Dai-ichi Nuclear Accident after the 2011 Great East-Japan Earthquake and Tsunami*. The United Nations General Assembly endorsed the plan in its resolution of 12 January 2012. The work involves 72 scientists from 18 countries.

The UNSCEAR assessment project includes a Coordination Expert Group and four Expert Groups focusing upon the following areas:

- data compilation, screening, quality assurance and documentation
- assessment of radionuclide releases and dispersion
- dose assessment to humans and biota
- assessment of worker doses and health effects.

ARPANSA provides three experts to the Expert Group on dose and risk assessment to humans and biota:

- the Group Leader
- a Rapporteur
- a Critical Reviewer.

The final report will be delivered next year for the Committee's review and acceptance at the 60th UNSCEAR session, and will be published in September/October of 2013.

Limit workers' exposure to radiation

Occupational exposure to ionising or non-ionising radiation occurs in a variety of work environments. Work environments may contain man-made sources of radiation, elevated levels of natural radiation, or radioactive materials from past activities. ARPANSA strives to promote the identification, characterisation and monitoring of work environments to raise awareness and to reduce exposures.

ARPANSA maintains the Australian National Radiation Dose Register (ANRDR), which involves the collection, storage and auditing of radiological dose histories for uranium industry workers in Australia. Following the official launch in June 2011, the ANRDR entered its operational and maintenance phase, and the ANRDR now contains dose history records for more than 24 300 workers from the uranium mining and milling industry.

During this financial year, ARPANSA, with the assistance of the New South Wales Government, assessed levels of naturally occurring radioactive materials (NORM) in a sample of metal mines, collieries, and quarries across New South Wales with a survey report published in August 2012. The survey examined a total of 29 mining operations in New South Wales comprising 7 collieries, 12 mines processing ore for metals, 9 mines that quarried various minerals or rocks and 1 tourist mine. The survey sampled all of the input, product and waste streams from the mining operations and analysed the samples for the activity concentration of those naturally occurring radionuclides which may give rise to significant radiation doses. The survey also included on-site measurement of radon in underground mines.

The survey results indicated that most mining operations do not have issues related to elevated levels of naturally occurring radioactive materials. However, given the high variability observed, both within and between mine sites, and the limited number of mines sampled in this study, it is likely that some underground mines may be above the action level.

ARPANSA has provided advice to the Department of Sustainability, Environment, Water, Population and Communities on the draft South Australian

ARPANSA scientist checking TLDs

Assessment Report that evaluates BHP Billiton's Draft Environmental Impact Statement and Supplementary Environmental Impact Statement submitted under the *Environment Protection and Biodiversity Conservation Act 1999* in relation to its proposed expansion of the Olympic Dam mining operations.

The Radiation Protection Series 9.1 document is a companion volume to RPS 9 - *Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing* and provides support to the ANRDR by promoting a nationally consistent approach to assessing occupational exposures in the industry.

Qualitative Deliverable	
Develop advice for the uranium mining industry on occupational health.	
Measure	Publish a *Safety Guide for Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing*.
Result	The *Safety Guide for Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing* was published in advance of the reporting period in June 2011 as Radiation Protection Series No. 9.1.

Qualitative Key Performance Indicator	
Better control of radiation dose to uranium mining workers and informing state and territory regulators on the effectiveness of current controls.	
Measure	Annual reporting of trend in radiation doses received by workers compiled from the Australian National Radiation Dose Register provides evidence of optimisation of radiation protection in the uranium mining industry.
Result	By the end of June 2012 the ANRDR held dose history records for more than 24,300 workers from the uranium mining and milling industry. A system is now available for reporting historical dose data to individuals on request.

Promote the effective use of ionising radiation in medicine

Improved radiation protection of patients through optimising patient doses

In 2011, Australians were exposed to radiation through at least 15 000 000 therapeutic and diagnostic procedures. Exposure to radiation during medical procedures represents the largest radiation exposure of the Australia population. In recent years, the growth in medical radiation usage has resulted in the dose from medical exposures surpassing natural background as the largest source of exposure of the Australian population.

All procedures involving radiation exposure of patients must be justified so that the procedure is appropriate in relation to alternatives and is anticipated to be beneficial to the patient. Procedures should also be optimised to ensure that they are implemented with minimal dose (for diagnostic imaging) or harm (during therapy) to the patient while maintaining efficacy.

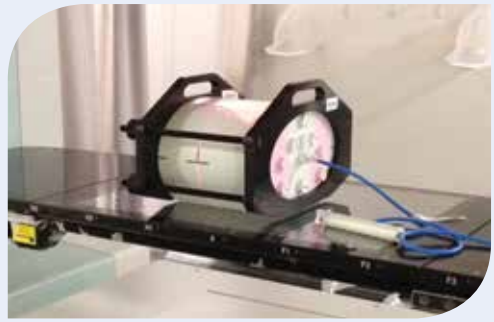
Over 50 000 Australians are treated with radiotherapy for disease cure or management each year. Accurate delivery of radiation dose during radiotherapy is a fundamental requirement for achieving the best patient outcomes. The numerous advantages include ensuring that the patient has the best chance for disease-free survival with minimal complications. Additionally, accurately planned and delivered radiotherapy enhances the efficiency of clinical trials, ensuring that research outcomes are achieved faster allowing more rapid introduction into clinical practice.

ARPANSA is involved in radiotherapy in two key ways. Firstly, ARPANSA maintains the national primary standard for absorbed dose. This standard for absorbed dose is the traceable reference to which all Australian radiation treatment machines, or linear accelerators, are calibrated. Secondly, ARPANSA audits radiation treatments through the Australian Clinical Dosimetry Service (ACDS). The ACDS provides an independent audit service to radiotherapy providers which measures whether the correct dose is being delivered by the radiotherapy treatment.

The Primary Standard for Absorbed Dose

The cobalt-60 calibration service, upon which all external beam radiotherapy treatments in Australia are currently based, continued operation and services were provided to 23 radiotherapy centres (an almost 50% increase over previous years). This amounted to the calibration of 24 secondary standard therapy ionisation chambers. A secondary standard calibration was also provided to the National Radiation Laboratory of New Zealand for dissemination to hospitals within New Zealand.

Level III Audit Phantom used by the ACDS arranged on a linac couch during a Level III clinical audit. The phantom allows the measurement of dose at key locations within the phantom to determine whether the correct dose is being delivered to the correct location. The audit simulates the process used with a real patient of imaging, planning, treating the phantom as a patient would be treated.



The direct calibration service from the ARPANSA medical standards linac was not made available to clinical radiotherapy centres in 2011-12. A decision was made early in 2012 to delay the introduction of the service in the light of unexpected technical challenges encountered in adapting measurement systems to the ARPANSA linac. These challenges have been addressed and the service will commence after an international comparison in September 2012. The comparison is required to provide necessary quality assurance and to assess the magnitude of changes that will inevitably occur in moving from a cobalt-60 calibration. A consistent reliable process is being developed with appropriate quality assurance that is important for patient safety. Pilot calibrations were made for the secondary standard ionisation chambers used by the ACDS for their linac audit program.

The Australian Clinical Dosimetry Service

In February 2011, the Australian Government formally launched the Australian Clinical Dosimetry Service (ACDS) as part of a three year trial to determine whether an independent auditing service can provide dosimetric and thus clinical support to radiation therapy patients and staff within Australia. The ACDS has designed a three level audit program, with each succeeding level having a more complex and challenging geometry. Level I is operational, Level II is in final development and Level III is in preliminary testing. This ACDS is similar to other audit programs internationally, but is unique in its coverage, national participation, audit design and final review process.

The ACDS enhancement of radiation oncology safety throughout Australia continued over the 2011-12 year. The ACDS has achieved nearly complete signup to its voluntary audit program from centres nationally and has requests for audits extending into 2013. These two indicators, participation rate and active engagement in the audit program, highlight both the importance that the radiotherapy providers assign to independent auditing, and acknowledgment that the ACDS can deliver a valuable program for radiation therapy in Australia.

Oversight of the ACDS is mandated through a Memorandum of Understanding (MoU) between ARPANSA and the Department of Health and Ageing (DoHA). The MoU requires that ARPANSA report to DoHA, the auditing requirements, milestones required for ongoing funding, and the formation of a Clinical Advisory Group (CAG). The CAG comprises of representatives from the professional organisations in Australia covering Radiation Oncologists, Radiation Therapists and Medical Physicists, private practice, the Radiation Oncology Reform Implementation Committee and the Trans Tasman Radiation Oncology Group. The CAG provides expert opinion to the ACDS and reviews the audit development. The MoU requires the ACDS to hold CAG meetings four times a year.

CT scanner

Since its inception, the ACDS has a performed Level I basic reference dosimetry audits on 52 linacs and 16 higher accuracy Level Ib audits on newly installed linacs. All the audits have been performed voluntarily at the request of radiotherapy providers. Counting all the audits performed throughout Australia, 66% of the radiotherapy centres have had at least one linac audited, equating to 42% of the individual facilities and just under half of all the linear accelerators in Australia.

The development of the Level II audits, which provide more extensive testing of the linear accelerators, and the Level III audits, which review the entirety of the treatment process, are being finalised. The Level II audit completed its planning phase and entered initial testing in early 2012. A requirement to re-equip for this audit has resulted in a slight delay. The end-to-end Level III audit field testing was completed at the end of May 2012. Providers across four states have already requested this audit.

Now a year into operation, the philosophy behind the audit design, initial results and future projections have been published and presented internationally resulting in considerable positive feedback and interest.

The mutual engagement between the ACDS and the wider radiation oncology community is further demonstrated by invitations to present on the establishment and progress of the audit program by The Royal Australian & New Zealand College of Radiation Oncology, The Australian Institute of Radiology and the Australian College of Physical Scientists and Engineers in Medicine. In addition to the formal yearly conferences, the ACDS has also presented to numerous state based branches of the three colleges, and many hospitals as part of a local audit. In total the ACDS has formally presented 18 times at national and international fora over the reporting period.

It is worth noting that external auditing for radiotherapy is recommended internationally to ensure patient safety, and that the accurate delivery of dose to the desired identified anatomy occurs when patients are treated.

Diagnostic imaging and nuclear medicine

Most of the 15 000 000 procedures involving ionising radiation that Australians undergo each year are diagnostic imaging procedures. Each of these procedures should provide images obtained with equipment and protocols which have been optimised for the radiation protection of the patient.

To obtain a measure of the contribution of diagnostic imaging to the Australian population dose, ARPANSA has undertaken two projects to estimate its impact. The first project is an analysis of the frequency data of imaging procedures using Medicare data and applying dose estimates for common procedures (see Figure 2). The summation of these figures enables an estimate of total dose delivered and dose delivered per modality.

Figure 2: Breakdown of diagnostic imaging procedures

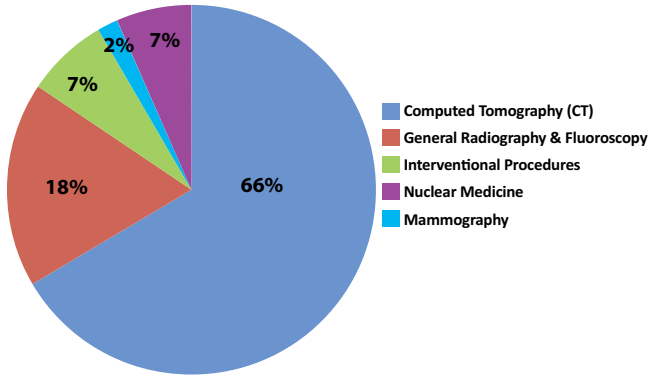


Table 2: Australian Adult MDCT Diagnostic Reference Levels

Adult Protocol	Dose Length Product (mGy.cm)	Computed Tomography Dose Index - $CTDI_{vol}$ (mGy)
Head	1000	60
Neck	600	30
Chest	450	15
AbdoPelvis	700	15
ChestAbdoPelvis	1200	30
Lumbar Spine	900	40

A Diagnostic Reference Level (DRL), is defined by the International Commission on Radiological Protection (ICRP) as:

'a form of investigation level, applied to an easily measured quantity, usually the absorbed dose in air, or tissue-equivalent material at the surface of a simple phantom or a representative patient.'

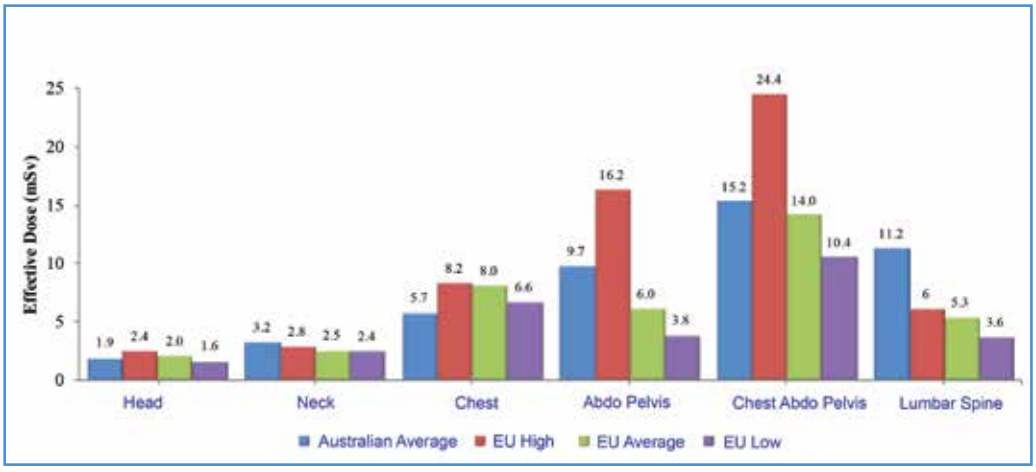
Australian Diagnostic Reference Levels provide a reference dose value(s) which 75% of participating practices are below for the acquisition of a particular image or imaging series of diagnostic quality. The published national DRLs for adult CT are presented above.

Optimising patient protection using diagnostic reference levels (DRLs)

National Diagnostic Reference Level Database

The second project is the National Diagnostic Reference Level Database (NDRLD). This survey allows radiology practices to log patient doses and receive Practice Reference Level (PRL) reports with which they can compare their practice dosimetry against those of their peers. While a nationally determined DRL is not a dose limit, in cases where the practices are delivering higher doses than Australian DRLs, it is expected that the practice will investigate and, where appropriate, optimise their doses. Suitable use of the NDRLD and PRL reports should enable a practice to ensure radiation doses to their patients are optimised while maintaining diagnostic image quality. In June 2012, Australian DRLs for CT of adults (Table 2) were published by ARPANSA with support from the Royal Australian and New Zealand College of Radiologists, the Australasian College of Physical Scientists and Engineers in Medicine, the Australian and New Zealand Society of Nuclear Medicine and the Australian Institute of Radiography.

Figure 3: Australian Average and Dose DataMed Effective Dose Comparison (mSv)



DRLs have been established and released for adult CT protocols. The survey software went live on 1 August 2011, with the first cohort of data finalised on 31 December. Over this five month period, data was provided by 88 radiology practices who submitted approximately 280 surveys. The calculated DRLs indicate that Australian values are in the mid to higher dose cohorts of comparative practices in Europe. The data survey is ongoing, based on calendar year acquisition periods and future DRLs will be developed and released on a three yearly cycle. Liaison panels, made up of representative professional groups as stakeholders, have been established for interventional cardiology and mammography DRL programs.

Figure 3 shows a comparison of Australian to European Union CT doses based on a conversion of Australian DRL dose values to effective dose (E, mSv).

ARPANSA did not meet the 2011-12 Budget Target of 2 DRL dose surveys because of unexpected delays in the software build which shortened the time frame for data to be collected and the number of practices that could respond to the initial invitation.

The 2011-12 budget target of 30% of cancer treatment centres transitioning to direct calibration based on ARPANSA's Linac was not met because of a deliberate delay in the introduction of the service because of significant problems encountered in adapting measurement systems to the ARPANSA Linac. These problems have subsequently been addressed and the service will commence after an international comparison in September 2012. The percentage of practices responding to the CT DRL survey was only 10% instead of the 50% forecast for this financial year because of the software delays which shortened the time frame for practices to respond.

International engagement

The ACDS attended the European Medical Physics and Engineering Conference in 2011, combining the conference with presentations at St Luke's Hospital in Dublin, the European Federation of Organisations for Medical Physics Workshop on Justification and Optimisation in Diagnostic Radiology and three day visit to the National Physical Laboratories (NPL) in the UK. Useful and practical discussions occurred

Qualitative Deliverable	
Develop diagnostic reference levels for radiology and performance criteria for radiotherapy treatments	
Measure	Diagnostic reference levels for radiology and performance criteria for radiotherapy treatments are developed and implemented with the involvement of professional peak bodies.
Result	Adult CT DRLs published.

Quantitative Deliverable	**2011-12 Budget Target**	**2011-12 Achieved**
Number of diagnostic reference level/doses surveys of diagnostic imaging modalities.	2	1
Cumulative proportion of centres audited by the ACDS for accuracy in dose measurement of radiotherapy.	50%	66%
Number of reports, publications and presentation on the optimisition of the use of ionising radiation in medicine.	>15	32

Quantitative key Performance Indicators	**2011-12 Budget Target**	**2011-12 Achieved**
Percentage of cancer treatment centres transitioning from indirect calibration (cobalt-60) to direct calibration based on ARPANSA Medical Standards Linac.	30%	0%[1]
Percentage of practices responding to computed tomography diagnostic reference levels survey.[2]	50%	10%

[1] Pilot calibrations were made for the secondary standard ionisation chambers used by the ACDS for their linac audit program. The 30% target was not met because of deliberate delays to address measurement problems.

[2] Unexpected delays in the software build limited the timeframe for data acquisition and the number of practices that responded to the initial invitation.

with all the centres visited, and the ACDS program stimulated great deal of interest from Irish Health System representative and the clinical audit group within the NPL. Outcomes from this trip have been an international cross-calibration of the new ACDS dosimetry technique, and an ongoing discussion with Irish-based physicists about national audit designs.

ARPANSA participated in IAEA Coordinated Research Project 2.10.08 on the Development of Advanced Dosimetry Techniques for Diagnostic and Interventional Radiology. Further laboratory work on the calibration and phantom dosimetry of Gafchromic film was completed and written up.

ARPANSA staff met with counterparts at the Radiological Society of North America in Chicago in November 2011 and met with specialists from the American College of Radiology concerning collaborative work on respective DRL projects and obtaining updates on development of radiation dose structured reports for use as a data logging tool for future DRL surveys.

ARPANSA staff attended Dose Datamed 2 held in Athens, Greece in April 2012 and presented Australian adult CT DRLs and also met with project managers concerning application of Dose Datamed 2 to Australasian and potentially SE Asian development. Direction and advice was taken on development of non-CT DRL survey structure and data sets.

ARPANSA attended the World Congress of Medical Physics in Beijing and the ACDS team delivered four presentations: two at the conference and one each for the Chinese National Institute Metrology (NIM) and Beijing Cancer Hospital. Interest and continuing enquiries are ongoing with representatives from the Bureau International des Poids & Mesures (BIPM) and NIM (China).

The results of international comparisons of the Australian primary standards for kilovoltage X-ray air kerma and Co-60 absorbed dose to water were published. All of the primary standards maintained by ARPANSA now have recent comparisons with their overseas equivalents, and the new results are available to users via the online BIPM Key Comparison Database. Measurements of neutron dose were undertaken for a regional comparison between seven standards laboratories in the Asia Pacific region. A new authorisation of ARPANSA by the National Measurement Institute (Australia) to maintain the Australian primary standards for radiation dosimetry was signed on 22 May 2012.

Ensure radiological and nuclear security and emergency preparedness

Radioactive material poses potential health risks if released into the environment through accidents or malicious acts. Measures need to be in place to control radioactive materials both within Australia and crossing Australia's borders. Protection of the Australian public and environment requires effective radiation emergency planning.

Development of incident management plan

In 2012 the ARPANSA Incident Management Plan (IMP) has been reviewed and revised, taking into consideration ARPANSA's roles as a regulatory authority, adviser and as the IAEA-designated National Competent Authority on radiation emergencies both domestic and abroad. ARPANSA has also incorporated many lessons learned after the Fukushima Dai-Ichi accident, recognising that the public and the government turned to ARPANSA for our nuclear safety, radiation heath and emergency response expertise. It is expected that ARPANSA will continue to collaborate closely with the Department of Health and Ageing National Incident Room and the Emergency Management Australia Crisis Coordination Centre in the further development and harmonisation of the IMP, which will ensure a seamless whole-of-government response to radiation and nuclear incidents or emergencies by Australia.

Australian Defence Force Visiting Ships Panel (Nuclear)

ARPANSA chairs the Technical Working Group (TWG) of the ADF Visiting Ships Panel (Nuclear), or VSPN. As part of the role as the TWG chair, ARPANSA (in conjunction with the ADF, ANSTO and the Tasmanian Government) conducted a Nuclear Powered Warship (NPW) Port Validation inspection for visiting NPW's to Hobart. Port Validations include assessing the emergency plan, running a desktop exercise and physically inspecting the anchorage locations and emergency response facilities. Recommendations were made to the chair of the VSPN and the site has been endorsed by the VSPN for future NPW visits. The Tasmanian government has consistently demonstrated a long-term commitment and competency to manage NPW visits, and continues to strengthen and improve their emergency plans and arrangements with each visit.

Council of Australian Governments (COAG) report on the security of radioactive sources

ARPANSA has continued to work with state and territory radiation regulatory bodies, the Department of the Prime Minister and Cabinet, state and Federal Police and ARPANSA licence holders to address the recommendations contained

ARPANSA Emergency Response teams on exercise detecting and characterising radioactive materials

USS Ronald Reagan (CVN76) visited a VSPN endorsed Berth in Brisbane in 23 Jan 2006.

within the 2006 COAG Report on the Security of Radioactive Sources. Specifically, ARPANSA and state and territory radiation regulatory bodies have agreed to a National Transfer Protocol for the transfer and transport of radioactive sources within Australia's borders. This new system will improve the movement of security enhanced sources across Australia and ensure that they can be monitored and regulated more closely.

ARPANSA in cooperation with state and territory radiation regulators are also developing a National Radiation Background Checking Framework which will compliment similar systems such as the highly successful Security Sensitive Biological Agents scheme, currently administered by the Department of Health and Ageing. This undertaking is aimed at ensuring that only approved persons have access to security enhanced radioactive sources within Australia.

ARPANSA, in consultation with the Radiation Health Committee and the radiation and security industries, have developed nationally accredited training competencies for a Radiation Security Advisor certification scheme. The training competencies have been accredited by the Australian Skills Quality Authority as a Vocational Graduate Certificate in Radiation Security Advice, and ARPANSA is negotiating with a Registered Training Organisation to deliver this qualification.

This will provide a pool of nationally qualified Radiation Security Advisers for the provision of protective security advice and the endorsement of Source Security Plans in all states and territories in accordance with the ARPANSA *Code of Practice for the Security of Radioactive Sources* (RPS 11). ARPANSA has continued to work with jurisdictions and licensees providing awareness training and advice, on an as required basis, for security enhanced radioactive sources in use, storage and transport.

ARPANSA has also assisted the IAEA in 2012 by developing guidance material and an international

Qualitative Deliverable	
Strengthened national and agency radiological/nuclear emergency planning and preparedness	
Measure	National system consistent with international requirements.
Result	ARPANSA Incident Management Plan developed which is currently being harmonised with the Attorney-General's Department Crisis Coordination Centre and the Department of Health National Incident Room consistent with IAEA requirements.

Quantitative Deliverable	**2011-12 Budget Target**	**2011-12 Achieved**
Number of Australian jurisdictions that maintain the integration of their source register with the national sealed source register.	9	9

training package on the Physical Protection of Nuclear Material During Transport. As a result, ARPANSA and the Australian Safeguards and Non-Proliferation Office will be co-hosting a Regional Training Course in Sydney in December 2012 to assist other countries with their transport security activities.

Border security and illicit trafficking of radioactive sources

The Australian Customs and Border Protection Service (Customs) is currently producing a report on the effectiveness of the detection of radioactive materials across Australia's borders, which maintains a strong regulatory emphasis on monitoring compliance with import/export permit processes; including mapping regulatory control either side of the physical border crossings to the Australian mainland. In order to balance the input and broaden the guidance to policy makers on border monitoring of radioactive sources; and the detection of illicit and inadvertent movement of sources, ARPANSA has also been engaged in the development of two international guidance documents with the Global Initiative to Combat Nuclear Terrorism (GICNT) Nuclear Detection Working Group (NDWG) and the IAEA.

ARPANSA's involvement in the development of GICNT NDWG awareness guidelines will benefit government officials and designated authorities within nation states undertaking nuclear detection architecture development when establishing rules and regulations around preventing the illicit trafficking of nuclear and other radioactive materials and devices; and offer guidance on how different organisations might collaborate.

ARPANSA assisted the IAEA in adapting the GICNT Model Guidelines on Nuclear detection architectures into an IAEA Implementing Guide on improving nuclear security detection infrastructure. This undertaking complements lessons learned from the recent ARPANSA and Australian Customs and Border Protection Service Radiological Exports Campaign exercise held earlier this year. In addition, ARPANSA is working with IAEA's Illicit trafficking database to improve information reporting and sharing of incidents and trafficking involving radioactive material that has fallen out of regulatory control to increase Australia's awareness and capability to monitor radioactive source movements.

Strengthened visibility in the movement of sources across our borders and within the region is achieved by ARPANSA through our officers who are authorised to approve the import and export of radioactive sources in accordance with Regulation 4R of the Customs (Prohibited Imports) Regulations 1956, and Regulation 9AD of the Customs (Prohibited Exports) Regulations 1958, respectively. As a result, 613 import permits and 12 export permits were granted by ARPANSA officers this year for the release of non-medical radioisotopes, and our close working relationship with Customs and state and territory radiation regulators continues to develop as we coordinate our activities in this area.

In September 2011, ARPANSA officers attended the annual Accident Reporting and Guidance Operating System (ARGOS) Consortium meeting in Copenhagen, Denmark which focuses upon Chemical, Biological, Radiological and Nuclear emergencies and included discussions on each consortium member country's use of ARGOS over the past year and the use of ARGOS during the Fukushima crisis.

Quantitative Key Performance Indicator	2011-12 Budget Target	2011-12 Achieved
Number of security incidents involving high activity radioactivity sources requiring immediate reporting.	<5	0

Develop and implement regulatory systems

National uniformity

ARPANSA is committed to effectively regulating the use of radiation by Australian Government entities and by promoting the adoption of a uniform framework across all jurisdictions. The main vehicle for the promotion of national uniformity of radiation protection throughout the jurisdictions is the National Directory for Radiation Protection (NDRP) which is jointly developed by ARPANSA and the state and territory radiation regulators through the Radiation Health Committee (RHC).

During the year the national uniformity process was advanced by the publication of Amendment 5 to the NDRP in July 2011. Amendment 5 clarifies that the justification principle applies to ionising radiation and adopts the *Code of Practice and Safety Guide for Radiation Protection in Veterinary Medicine* (RPS 17) and the *Code of Practice for Radiation Protection in the Application of Ionizing Radiation by Chiropractors* (RPS 19) for national implementation.

A further NDRP amendment (No. 6) has been developed and includes a number of issues: restructure of the wording of schedule 13 to clarify the scope of incidents to be reported, exemptions for certain lighting products, supplementary authorisation criteria for chiropractors and an updated reference to the transport code (RPS 2). A preliminary regulatory assessment report relating to this draft amendment was prepared and sent to the Office of Best Practice Regulation who confirmed that a Regulatory Impact Statement was not required. The public consultation process for Amendment 6 is underway with an expected completion date in September 2012.

To support implementation of the previous NDRP amendment (No. 4) regarding regulation of solaria, ARPANSA developed an online training course for solarium operators, which was launched in May 2011. In its first twelve months of operation over 160 solaria operators undertook the course.

The Safety Guide (RPS 18) for the Use of Radiation in Schools was republished to include the newly prepared Part 2 on lasers. This document provides practical advice and guidance on the use of radiation sources in Australian secondary schools and colleges and will promote a nationally consistent approach.

International engagement

IAEA Commission on Safety Standards (CSS)

ARPANSA maintains a significant presence in the Commission on Safety Standards and Safety Standards Committees and in the new Nuclear Security Guidance Committee. ARPANSA represented Australia at the 30th Meeting of the CSS held in Vienna from 1 to 3 November 2011. ARPANSA's CEO is a Member of the Commission. This meeting considered the consequences of the Fukushima nuclear emergency with a view to reflecting the lessons learned into future safety standards and revision of existing ones. The CSS also considered the IAEA Action Plan developed in 2011. We followed this up with our attendance at the 31st meeting of the IAEA CSS in Vienna between 27 to 29 March 2012. Both the 30th and the 31st meetings considered a range of Safety Requirements covering all aspects of radiation protection, radioactive waste safety, transport and nuclear safety including a major rewrite of the IAEA Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards. Both the Safety Standards Committees and the CSS performed a 'gap analysis' of the whole suite of Safety Standards following the Fukushima accident forming the conclusion that the existing Safety Requirements provide a robust framework. Nonetheless, as a result of this gap analysis, a number of safety issues were identified and more are likely to emerge once international stress testing of nuclear power plants is completed and reported on.

IAEA Waste Safety Standards Committee (WASSC)

ARPANSA's Dr Geoff Williams, who is Chair of WASSC, attended the 32nd meeting of WASSC in December 2011 during which, approval was given to begin drafting a revision of the international Safety Guide on '*Management of Radioactive Waste from the Mining and Milling of Ores*' (WS-G-1.2). The scope of the updated safety guide will include radioactive residues that arise from

mining and milling of ores for the extraction of uranium or thorium, and NORM industries including mining and processing of other ores, the oil and gas industry and the phosphate industry. Guidance on occupational exposures is outside the scope of this Safety Guide. The tentative working title is *Management of NORM residues from Mining and Processing of Ores*.

Other documents approved included the revised Safety Guide '*Safety Aspects in Siting for Nuclear Installations*' for sending to Member States for comment, after inclusion of a footnote to include predisposal waste management facilities into the definition of nuclear installations.

WASSC continued to review the implications of the Fukushima Accident on the suite of IAEA Waste Safety Standards, and a report was prepared for the IAEA Commission on Safety Standards.

At the 33rd meeting of WASSC held in June 2012, the draft Safety Requirements standard '*Decommissioning of Facilities*' (GSR Part 6) was approved to be sent to Member States for comment, after incorporating changes agreed at the meeting and approval of the WASSC Chair. Changes requested included simplifying the title from '*Safe Decommissioning...*', removing any suggestion that 'entombment' is a strategy for decommissioning (rather than a remediation strategy), and ensuring proper allowance for flexibility in the time-frames (such as the usual need for a short transitioning period). This international standard is important for Australia in light of future decommissioning of HIFAR.

Approval was given to begin drafting a new Safety Guide '*Communication and Consultation with Interested Parties*'. This important IAEA Safety Guide will aid in confidence-building with stakeholders.

Reports were presented to WASSC of a number of standards under development that are relevant for ARPANSA's new Regulatory Guide on waste storage and disposal. These draft documents have been referenced in the current draft submitted for public consultation from July to September 2012.

IAEA Transport Safety Standards Committee (TRANSSC)

ARPANSA represented Australia at the 23rd meeting of TRANSSC from 24 to 28 October 2011. The meeting was very productive in resolving the key issues related to TS-G-1.1 (Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material). It is expected that the revised IAEA Regulations for Safe Transport of radioactive Material, TS-R-1, will be published in 2012. TS-G-1.1 will also be published in line with TS-R-1. The outcomes of the TRANSSC meeting will be reflected in Australian context by updating:

- the ARPANSA *Code of Practice for Safe Transport of Radioactive Material* (RPS 2) in line with the IAEA cycle to ensure uniformity and harmonisation for safe transport of radioactive material nationally and internationally
- the *Safety Guide for the Safe Transport of Radioactive Material* (RPS 2.1).

In September 2011, ARPANSA attended the 7th International Conference on Isotopes held in Moscow and presented two papers related to safety performance indicators in Radioisotope Production facilities in Australia and Decommissioning of 30 MeV National Medical Cyclotron Facility. This triennial conference provided an opportunity to reflect upon the Australian process for nuclear installations in the light of international best practice.

In October 2011, ARPANSA also attended the International Conference on the Safe and Secure Transport of Radioactive Material: The Next Fifty Years - Creating a Safe, Secure and Sustainable Framework was held in Vienna. ARPANSA presented an invited paper on Australian Experience in Implementing the Transport Safety Regulations and Transport Security Recommendations. The conference provided an opportunity to reflect on the Australian practice in the light of practices adopted by other countries, industry experience and the areas where Australia can improve.

Ensure compliance with regulation

The Australian Government is committed to the effective and independent regulation of radiation sources, radiation facilities and nuclear installations. ARPANSA will continue to regulate the use of radiation by Australian Government entities through: licensing, inspecting, monitoring, enforcing compliance, enhancing awareness of good radiation practices and nuclear safety, controlling the import and export of radioactive sources, and controlling the transport of radioactive materials by Australian Government entities and their contractors.

Compliance with Commonwealth legislative and regulatory frameworks are monitored by ARPANSA in a number of ways, including assessment of licence applications, inspections, and surveys. Enforcement actions may be used in situations of non-compliance. The aim is to establish a safety culture that effectively provides reassurance that activities carried out under a licence from ARPANSA will not be harmful to people or the environment.

ANSTO OPAL reactor - Periodic Physical Protection and Security (PP&S) Review

Consistent with the expectations contained within the IAEA Nuclear Security Fundamentals general principles for competent authorities and regulatory bodies, ARPANSA continues to work closely with the Australian Safeguards and Non-Proliferation Office (ASNO) on nuclear security matters relating to nuclear material, other radioactive material, associated facilities and associated activities.

In January 2012 ARPANSA and ASNO jointly created the PP&S Review Working Group in order to assess the ANSTO periodic security review submission, which was received August 2012. This working group consists of members from ARPANSA's Security and Community Safety team and ASNO's Nuclear Security team. The working group will review ANSTO's submission this financial year and may also provide nuclear security suggestions or recommendations to ANSTO based upon our collective experiences and knowledge of international best practice.

The IAEA Nuclear Security Series and the ARPANSA Radiation Protection Series No.11 *Code of Practice for the Security of Radioactive Sources (2008)* will be the primary benchmarks for the assessment, notwithstanding the existing ARPANSA licence conditions and stringent ASNO permit requirements. Nuclear facilities such as ANSTO's OPAL Reactor are heavily regulated facilities where safety, security and safeguards are closely monitored and continuously assessed.

ARPANSA has also worked closely with ASNO and other relevant government bodies in reviewing and revising the National *Design Basis Threat* for which the ANSTO physical protection and security systems are to be designed and implemented against. This undertaking led by ASNO's Nuclear Security team forms an essential element of a country's Nuclear Security Regime, ensuring that any security measures that are designed and implemented are risk-informed and consistent with current international nuclear security trends.

ARPANSA is committed to carrying out its regulatory functions in a responsive and timely manner. To ensure this, ARPANSA has established its own Key Performance Indicators and targets. For timeliness of assessing licence applications see Table 3 which lists the targets and performance for 2011-12 for incidents, inspections and breaches against the previous four years.

Qualitative Key Performance Indicator	
Acceptable safety culture observed amongst regulated entities.	
Measure	Acceptable safety culture achieved in all observed entities, as assessed by a compliance program, including holistic safety assessments of a representative sample of entities.
Result	There were no major deficiencies observed and substantial progress by two key licence holders was determined by active regulatory oversight and liaison between the licence holder and regulator.

Table 3: Trend Data: achievement against the targets included in the PBS for 2011-12

Measure	Annual Target	Result 2008-09	Result 2009-10	Result 2010-11	Result 2011-12
Incidents[1]	<20	12	25	5	4
Inspections	60	66	40	49	62[2]
Breaches	<20	42	31	23	2

[1] The number of incidents reported here is the number which have been reported to the Australian Radiation Incident Register as detailed in Schedule 13 of the *National Directory for Radiation Protection*.
[2] Of the 62 inspections undertaken, 47 inspections were announced and 15 inspections were unannounced.

Inspections

During the course of the year ARPANSA undertook a planned inspection program of sources, prescribed radiation facilities, and nuclear installations operated by its licence holders in order to monitor compliance with the ARPANS Act and the Australian Radiation Protection and Nuclear Safety Regulations 1999.

A summary report of these inspections can be found on the ARPANSA website at www.arpansa.gov.au/Regulation/Inspections/index.cfm.

The inspection program was planned on the basis of:

- licence holder risk ranking
- licence holder compliance history
- licence holder incident and accident history
- date of last inspection.

Significant activities in relation to regulatory oversight

- Between 20-21 October 2011 ARPANSA inspectors participated in a training workshop by an external training organisation relating to compliance investigations.
- From 7-15 November 2011 ARPANSA was the subject of an IAEA Integrated Regulatory Review Service (IRRS) follow-up mission. The initial mission was conducted from 25 June to 6 July 2007. A copy of the report, and an action plan describing the activities ARPANSA plans to deal with outstanding or new recommendations and suggestions can be found on the ARPANSA website at www.arpansa.gov.au/Regulation/irrsreview.cfm.
- In November 2011 ARPANSA approved ANSTO to undertake stage 2 decommissioning activities of the Camperdown Facility.
- In November 2011 ARPANSA inspection report summaries were made available on the website for the first time to improve transparency. Feedback was sought from licence holders and significant comments addressed before the new initiative commenced.
- An ARPANSA licence holder forum was held on 29 November 2011 at Victoria Barracks, Department of Defence, Melbourne. The forum addressed, among other things, 'holistic safety assessments' as parts of improving and promoting a good safety culture, and was attended by 70 licence holder representatives from 15 organisations. A series of presentations was made by ARPANSA regulatory officers and external speakers. These can be accessed on the website at www.arpansa.gov.au/Regulation/forums/index.cfm.
- On 23 December 2011, ARPANSA received a report on the Periodic Safety Review (PSR) of the ANSTO OPAL reactor which was a

Quantitative Deliverable	2011-12 Budget Target	2011-12 Achieved
Number of inspections of facilities holding a Commonwealth licence.	60	62
Regulatory processes measured by the number of reports prepared per regulatory officer, for each of licence application assessment reports; licence amendment assessment reports and licence inspection reports.	>7	6

Table 4: Internal ARPANSA Key Performance Indicators for timeliness

Internal ARPANSA Key Performance Indicators	2011-12 BudgetTarget	2011-12 Achieved
Average time to assess facility licence applications	<60 days	93 days[1]
Average time to assess source licence applications	<30 days	29 days
Average time to assess Regulation 51 requests	<30 days	34 days

[1] The KPI for facility licence applications is for typical prescribed radiation facilities. In this case there was only one facility licence application which was not typical, and consequently required more assessment time.

requirement of licence condition 1 of the OPAL licence. Since the initial submission ARPANSA has held a series of regulatory meetings with ANSTO Senior Management to agree on a list of actions to be taken as a result of the Periodic Safety Review. In accordance with IAEA recommendations, the PSR should produce a set of corrective actions to improve plant and processes to improve nuclear safety.

- A regulatory guide has been produced on how to determine when a radiofrequency (RF) device is a controlled apparatus under the ARPANS Regulations (1999). This advice can be found on the website at www.arpansa.gov.au/Regulation/guides.cfm#4b.
- In December 2011, ARPANSA inspectors observed an emergency exercise at Lucas Heights for the OPAL research reactor. The inspection report can be found on the ARPANSA website at www.arpansa.gov.au/pubs/regulatory/inspections/R11-14686.pdf.
- During 2011-12 ARPANSA developed a new compliance and enforcement policy. This policy also describes ARPANSA's graded response to non-compliance which is detailed in the guidance at www.arpansa.gov.au/pubs/regulatory/guides/OS-COM-SUP-270J.pdf.
- In February 2012, ARPANSA gave approval to ANSTO to move from an 8 hour to a twelve hour shift roster for the OPAL Operations staff.
- In May 2012, at the request of ARPANSA Operations Services an inspection of the ARPANSA Medical Radiation Services laboratories at Yallambie was undertaken by independent inspectors from Queensland Health appointed under the ARPANS Act. No non-compliances with licence conditions were found and a number of recommendations for improved safety and security practices were made. A summary inspection report will be posted on the ARPANSA website when it is finalised.
- In May 2012, ARPANSA consented to the surrender of facility licence F0200 by ANSTO for the 3 MV Van De Graff generator at Lucas Heights.
- In June 2012, ARPANSA approved a Regulation 51 request by ANSTO to move to a flexible fuel management strategy for the OPAL reactor. The flexible fuel management strategy allows for more flexibility in refuelling of the OPAL reactor so that unscheduled reactor trips do not have extensive knock-on effects for users.
- In June 2012, ARPANSA issued a facility licence to ANSTO to operate the 18 MeV cyclotron at Camperdown, New South Wales.
- In order to conform with a recommendation by the IRRS mission, ARPANSA is developing a *Regulatory Guide: Transport of Radioactive Material*. A series of 3 Defence ARPANSA Liaison Forum meetings were held in August 2011, February 2012, and March 2012 to discuss Defence compliance issues.

Breaches

Breaches with safety implications

Australian Customs and Border Protection Service (Customs) was in breach of the ARPANS Act for possessing a controlled apparatus, a class 4 laser contained in a FLIR (Forward Looking Infrared) device, which was not covered by their source licence (see Table 5). On 1 November 2010, Customs informed ARPANSA of the potential breach and subsequently a new licence application was submitted by Customs. On 16 December 2011, ARPANSA issued Customs with a new licence

Quantitative Key Performance Indicator	2011-12 Budget Target	2011-12 Achieved
Number of breaches by Commonwealth users of radiation of their conditions of licence	<20	2[1]

[1] During the financial year 2011-12, the policy for reporting breaches changed and comparison with previous years is not meaningful, particularly, in relation to the determination of when a non-compliance is to be reported as a breach by ARPANSA in its Quarterly Report. As a result of these new reporting processes during this transitional period, the number of non-compliances which were determined to be breaches by ARPANSA decreased. A revised compliance and enforcement policy, including how breaches are determined, is now available on the ARPANSA website at www.arpansa.gov.au/Regulation/LicenceHolders/index.cfm#1.

authorising their dealings with class 4 lasers.The root cause of the breach was identified as being the licence holder's lack of awareness of their regulatory requirements. The breach was assessed to have moderate safety implications, however, as the FLIR was brought within regulatory control, no enforcement action was taken.

Breaches with no or minor safety implications

A licence holder was found in breach of section 30(2) of the ARPANS Act by failing to comply with licence conditions, which was subsequently determined to have minor safety implications. Due to the corrective actions undertaken by the licensee no enforcement action was considered necessary.

Table 5: Breaches with safety implications

Licensee	Licence number	Nature of breach
Australian Customs and Border Protection Service	S0092	Breach of S31(1) of the ARPANS Act for unauthorised possession and use of a class 4 laser on a forward looking infra-red device on an Australian Customs ship.

Discussion and analysis of financial performance

Financial Report on Performance

For the financial year ending 30 June 2012, ARPANSA reported an operating deficit of $2.39m. This deficit was primarily attributable to changes in the way depreciation expenses are funded by Government.

Total revenue for the year was $26.7m of which 60% is appropriated by government. The remaining amounts relate to fee revenue generated from our licence holders and from the sale of goods and services.

This financial year ARPANSA incurred $29.1m in expenses. Employee benefits account for nearly $18m of this total. Further, $3.1m did not require appropriation in the budget year. This amount was made up of $2.54m in depreciation and amortisation expenses with the balance made up of an increase to the revaluation of long service leave provision as a result of the government's change to the bond rate.

The agency continues to review the efficiency and effectiveness by which it delivers its program to the Australian people to ensure that we operate within our financial constraints.

The agency's non-financial assets were re-valued at 30 June 2012, and now total $28.6m. This includes increases to both the recently-renovated Yallambie building and the associated land holding. As part of the agency's capital replacement program, we invested $5.34m to complete the renovation of stage 2 of the Yallambie facility along with the purchase of new and replacement scientific and computer equipment to support the delivery of our services to the government and the community. Our cash holdings continue to be at levels required to support current resourcing requirements to achieve the agency's strategic objectives.

There have been no developments since the end of the financial year that have affected or may significantly affect the Agency's operations or financial results in the future.

Table 6: ARPANSA Expenses for Outcome 1

Outcome 1: Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, services and regulation	**Budget* 2011-12 $'000 (a)**	**Actual Expenses 2011-12 $'000 (b)**	**Variation $'000 (a)-(b)**
Program 1.1: (Radiation protection and nuclear safety)			
Departmental expenses			
Ordinary annual services (Appropriation Bill No. 1)	16 130	16 130	0
Special Accounts	9 411	9 927	(516)
Expenses not requiring appropriation in the Budget year	2 338	3 080	(742)
Subtotal for Program 1.1	27 879	29 137	(1 258)
Total for Outcome	27 879	29 137	(1 258)

	2009-10	**2010-11**
Average staffing level (FTE)	144	147

* Full year budget, including any subsequent adjustment made to the 2011-12 Budget.

Table 7: ARPANSA Resource Statement – 2011-12

	Actual Available Appropriation for 2011-12 $'000 (a)	Payments Made 2011-12 $'000 (b)	Balance Remaining 2011-12 $'000 (a-b)
Ordinary Annual Services[1]			
Prior year departmental appropriation[2]	2 535	2 535	
Departmental appropriation[3]	18 483	17 903	580
Total	21 018	20 438	580
Total ordinary annual services	21 018	20 438	
Other services[4]			
Departmental non-operating			
Equity injections			
Total			
Total other services			
Special Accounts[5]			
Opening balance	1 602		
Appropriation receipts6	20 438		
Non-appropriation receipts to Special Accounts	12 939		
Payments made		33 323	
Total Special Account	34 979	33 323	1 656
Total resourcing and payments	55 997	53 761	
Less departmental appropriations and equity injections drawn from the above and credited to special accounts	(20 438)	(20 438)	
Total net resourcing for ARPANSA	35 559	33 323	

[1] Appropriation Bill (No.1) 2011-12.

[2] Balance carried from previous year for annual appropriations.

[3] Includes an amount of $2.353 million in 2011-12 for the Administered Capital Budget. For accounting purposes this amount has been designated as 'contributions by owners'.

[4] Appropriation Bill (No.2) 2011-12.

[5] Does not include 'Special Public Money' held in accounts like Other Trust Monies accounts (OTM). Services for other Government and Non-agency Bodies accounts (SOG), or Services for Other Entities and Trust Moneys Special accounts (SOETM).

[6] Appropriation receipts from ARPANSA's annual and special appropriations for 2011-12 included above.

Service charter

ARPANSA has committed to a service charter that sets out the standards of service that all stakeholders can expect from the agency. Amongst other things the charter provides a complaints resolution mechanism and is available in full on the ARPANSA website at www.arpansa.gov.au/AboutUS/corporate/servicecharter.cfm.

ARPANSA's customers are in both the public and private sectors (overseas as well as within Australia) and include:

- people who use radiation in medicine, research and industry (including mining)
- Commonwealth, state and local government agencies
- environment protection agencies
- international organisations
- academia and research organisation
- general public, interest groups and the media.

Services provided by ARPANSA include:

- traceable calibrations of ionising and non ionising radiation monitoring equipment
- the Personal Radiation Monitoring Service (PRMS)
- the assessment of Ultraviolet Protection Factors (UPF)
- advice, measurements, consultancy, and training on a range of radiation protection issues
- the issue of Customs (Prohibited Imports) permits for the importation of radioactive materials into Australia.

Client complaints

As part of the quality management system of ARPANSA services accredited by the National Association of Testing Authorities, all corrective actions arising from client complaints are recorded. In accordance with the quality system, these actions are reported to the ARPANSA Quality Manager and the relevant Branch Head.

Part 4: Management and Accountability

Corporate governance

Corporate governance practices

ARPANSA's role, functions and powers are defined by the *Australian Radiation Protection and Nuclear Safety Act 1998* (ARPANS Act). ARPANSA is constituted by the office of the CEO, created by the ARPANS Act, who is authorised to engage employees under the *Public Service Act 1999*. ARPANSA is a statutory agency for the purpose of the Public Service Act and a prescribed agency under the *Financial Management and Accountability Act 1997* (FMA Act).

The CEO reports through the Parliamentary Secretary to the Minister for Health and Ageing and administers the following Acts:

- *Australian Radiation Protection and Nuclear Safety Act 1998*
- *Australian Radiation Protection and Nuclear Safety (Consequential Amendments) Act 1998*
- *Australian Radiation Protection and Nuclear Safety (Licence Charges) Act 1998*.

ARPANSA has an integrated corporate governance framework designed to provide a sound basis for decision making, to define the mechanisms for accountability and stewardship, to support the achievement of organisation goals and to ensure all legal and regulatory requirements are met.

ARPANSA management

The CEO and senior management allocate the resource budget, make strategic decisions and set key priorities through a Strategic Management Committee (SMC). The members comprise the CEO, ARPANSA Branch and Office Heads and an external member from the Bureau of Meteorology.

The SMC meets monthly in accordance with a formally approved timetable and agenda and deals with significant strategic issues.

The ARPANSA Corporate Counsel provides independent advice to the CEO on regulatory and operational matters.

The CEO has delegated various powers and functions to Branch and Office Heads, and staff reporting to them, to ensure that ARPANSA business is carried out efficiently and effectively. The CEO requires his delegates to act in accordance with approved policies and procedures, including Chief Executive Instructions, formulated in accordance with the Commonwealth legislative framework, including the FMA Act. A program of mandatory formal training on various compliance issues is maintained to provide refresher training to staff over a rolling three year cycle.

Senior management committees

The CEO and senior executives meet regularly, usually weekly, to discuss high level administrative and operational matters. Additionally, a number of advisory committees support the CEO and Branch and Office Heads in their management role.

Audit and Risk Committee

The ARPANSA Audit and Risk Committee comprises an independent chair, Mr Michael Perry, three senior managers from within ARPANSA and an external member from the Attorney-General's Department, Mr Stephen Lutze, General Manager, Finance and Property Division. The Corporate Counsel serves as secretary to the Committee. Representatives of the Australian National Audit Office attended committee meetings as observers and the agency's internal auditor, Oakton Services Pty Ltd and Chief Finance Officer attended meetings to report on particular matters. Branch Heads were also invited to attend on occasions to discuss particular audit reports and risks relevant to their responsibilities. The CEO is an observer to the Committee.

The Audit and Risk Committee, through the internal audit program, assists the CEO to maintain and improve:

- the effectiveness of the internal control framework
- the effectiveness of ARPANSA's risk management processes including business continuity and fraud control
- the quality of financial management and reporting processes
- overall compliance with relevant legislation in particular the FMA Act.

The Audit and Risk Committee met four times in 2011-12 and reported to the CEO after each meeting.

As well as considering audit reports, during the year the Audit and Risk Committee:

- reviewed the risk based rolling five year strategic audit plan
- maintained a program of self assessing its own performance and reviewing the performance of internal audit
- provided assurance to the CEO on the integrity of the agency's Financial Statements and compliance processes.

The Australian National Audit Office provided external audit services through PricewaterhouseCoopers.

Information Management Steering Committee

The Information Management (IM) Steering Committee meets bi-monthly and is chaired by the Head of the Office of the CEO. The Committee comprises nominees from within the Branches and Offices and the Manager Information Management. The committee oversees the development and implementation of the ARPANSA information management strategy; reviews and approves IM and information and communication technology (ICT) policies; assesses, monitors and manages ICT risks and fosters the development of ICT skills and capabilities.

Work Health and Safety Committee

The Work Health and Safety Committee (WHS Committee) is chaired by the Head of the Office of the CEO, assisted by the ARPANSA WHS Co-ordinator, and comprises staff and management representatives. The WHS Committee meets every two months and reviews and reports to the SMC on relevant ARPANSA health and safety issues, on the effectiveness of ARPANSA's performance in these areas and compliance with relevant legislation in accordance with the ARPANSA WHS Management System. During the year the WHS Committee conducted a number of WHS work area inspections. Further information in respect of WHS arrangements within the agency is at Appendix 1.

Radiation Safety Committee

The Radiation Safety Committee, chaired by the Radiation Safety Officer and comprised of Branch Radiation Safety Advisors and other relevant staff, reports to the WHS Committee on matters relating to workplace radiation protection and safety.

Corporate and operational planning and performance

The *ARPANSA Strategic Directions 2012-2016* sets out strategic directions and key areas the agency intends to focus on during the coming year and beyond.

The Strategic Directions are supported by branch and office operational business plans that describe the activities undertaken to accomplish those key priorities. Individual performance and development plans provide the framework for performance and accountability assessment. The framework is underpinned by management systems and strategies including internal audit, risk management, fraud control, compliance, business continuity, security, quality and information management.

The Strategic Management Committee receives a quarterly Performance and Accountability Report which highlights progress against the key areas.

Internal control

The CEO must report annually to the Portfolio Minister, by way of a certificate of compliance, on the financial management and financial sustainability of the agency.

The certificate requires the CEO to certify that, based on ARPANSA's internal control mechanisms, management assurance, and Audit and Risk Committee advice, it has:

- complied with the Australian Government's financial management framework and other specified Commonwealth policies
- operated within the agreed resources for the current year and has adopted, or will adopt the appropriate management strategies for all known risks that may affect the financial sustainability of their agency.

ARPANSA has a robust internal governance and control framework comprising formal plans, policies, instructions and guidelines. The agency has adopted the Compliance Self Assessment (CSA) methodology for annual compliance sign-off and developed a risked based compliance assessment questionnaire to guide management in their review. The annual CSA by management and internal audit review of the effectiveness of internal control mechanisms provide the assurances required to

support the certification. Branch and Office Heads are required to provide additional assurances and certifications regarding compliance for their areas of responsibility, and to report on any instances of non-compliance with the framework.

ARPANSA Quality System

The ARPANSA Quality System employs two levels of management review. The first, at the Branch level, reviews the service activities of the Branch in detail, and the second at senior management level by the ARPANSA Quality Management Committee (QMC). The QMC, which comprises the CEO, Branch and Office Heads and the Quality Manager, acts under the auspices of the Strategic Management Committee Charter and meets quarterly to review reports from the branch quality meetings. The QMC has the overall responsibility for ensuring the services offered by ARPANSA are delivered in a manner consistent with the principles of quality and as set out in ISO 9000 and ISO 17025.

Seven of ARPANSA's laboratories maintain National Association of Testing Authorities (NATA) accreditation and are regularly assessed by NATA against the above standards. During the year NATA conducted technical re-assessments of the quality systems in place in each of the Measurement Science and Technology services.

As required by the Quality Standard ISO 17025, all service activities are internally reviewed annually by qualified auditors selected from the ARPANSA Quality Assurance Team made up of representatives of the services. Operational procedures and aspects of the management requirements of the Standard are audited in accordance with an approved schedule.

Identification and management of risk

Risk management is an integral part of ARPANSA's Corporate Governance framework. The agency's business planning framework, including setting of performance targets for staff, is also underpinned by relevant risk assessment processes. Strategic and key operational or project risks are reviewed quarterly by the Audit and Risk Committee and monitored by the Strategic Management Committee.

Business planning templates were revised during the year to enhance explicit risk assessment of planned activities and to facilitate improved risk reporting to the Strategic Management Committee. The ARPANSA Strategic Risk Register and Branch Risk Registers were reviewed during the year.

ARPANSA achieved a premium reduction following insurer Comcover's risk management benchmarking survey in 2011.

Internal audit

Oakton Services Pty Ltd has been ARPANSA's internal auditors since November 2008. Significant internal audits conducted in 2011-12 included reviews of:

- freedom of information and privacy
- travel management
- strategic planning
- post implementation review of the Information Management Review
- purchasing, accounts payable and credit cards.

Business continuity

A major review of the ARPANSA Business Continuity Plan was commenced during the 2011-2012 financial year and it is currently being aligned with the Incident Management Plan which is being developed to build on the lessons learned during ARPANSA's response to the Fukushima accident.

Compliance with Commonwealth Fraud Control Guidelines

ARPANSA's fraud control plan is in accordance with the requirements set out in the ARPANSA Risk Management framework and conforms with the *Commonwealth Fraud Control Guidelines*. The plan outlines strategies and processes to detect, prevent, investigate and minimise the effect of fraud and is currently undergoing a biennial review.

In accordance with the *Commonwealth Fraud Control Guidelines* ARPANSA provided the Annual Fraud Report to the Australian Institute of Criminology for the year ended 30 June 2012.

Ethical standards

All ARPANSA staff must adhere to the *Australian Public Service Values* and *Code of Conduct* under the Public Service Act. ARPANSA actively promoted ethical standards among its staff by conducting training and awareness program relevant to the APS values and Code of Conduct. Additionally, a mandatory training program is in place that includes refresher training over a three year cycle on such things as Preventing Bullying and Harassment in the Workplace and Privacy.

A commitment to ethical standards is also highlighted in the *ARPANSA Agreement 2011-2014*, the *ARPANSA Strategic Directions 2012-2016* and the *Workplace Diversity Program 2012-2015* and is included in the induction packages provided to all new employees.

There are formal procedures to ensure disclosure of any real or apparent conflict of interest. Senior staff are required to disclose to the CEO all direct or indirect pecuniary interests in businesses and companies which may be affected by ARPANSA's decisions.

External scrutiny

Key external accountability institutions for ARPANSA include the:

- Commonwealth Parliament
- Commonwealth Auditor General, who is an officer of the Parliament
- Commonwealth Ombudsman
- Australian Information Commissioner, including the Freedom of Information and Privacy Commissioners
- Administrative Appeals Tribunal
- Federal system of courts, including the Federal Court and High Court of Australia.

As required by the ARPANS Act, the following mechanisms for external stakeholder input to ARPANSA's processes are in place:

- Radiation Health and Safety Advisory Council
- Radiation Health Committee
- Nuclear Safety Committee.

Their activities for the current year are reported in Appendix 7 of this Report.

Judicial decisions and decisions of administrative tribunals

There have been no judicial decisions and decisions of administrative tribunals during 2011-12 that have had, or may have, a significant impact on the operations of ARPANSA.

Reports by the Auditor-General, a Parliamentary committee or the Commonwealth Ombudsman

There have been no reports on the operations of ARPANSA by the Auditor General (other than the report on financial statements), a Parliamentary committee or the Commonwealth Ombudsman during 2011-12.

Management of human resources

During 2011-12, ARPANSA continued to enjoy the organisational benefits of an effective and committed workforce. Employee commitment was evidenced by the relatively low staff turnover, as compared to other Australian Public Service agencies. However, staff surveys carried out during 2011-12 also indicated areas where there is room for improvement which needs addressing in the following financial year.

The low staff turnover presents ARPANSA with a major challenge over the next 5-10 years as experienced employees proceed to retirement. The continued maintenance of the scientific quality and integrity of its operations and services in the face of this loss of experience will obviously become an issue for the agency over the ensuing years. The maintenance of critical mass in these important specialist aspects of ARPANSA's operations presents a significant workforce planning challenge for the agency.

During the 2011-12 year ARPANSA placed an emphasis on strategic people management issues with a particular accent on human resources, workforce planning, learning and development and information management/communications with the key plank of this strategy being the appointment of a Human Capital Management role.

Voluntary redundancy program

ARPANSA undertook a limited voluntary redundancy program for staff interested in separating from the agency prior to 30 June 2012. Six staff members took up the offer.

Workplace diversity

Consistent with legislative requirements, ARPANSA reviewed its *2006-2010 Workplace Diversity Program* during the reporting period.

The *2012-2015 Workplace Diversity Program* (WDP) came into effect in March 2012. The program is supported by a *Workplace Diversity Action Plan*.

As in past years, ARPANSA continued to promote workplace diversity and reinforce the roles and responsibilities of all staff in increasing awareness and acceptance of workplace diversity principles through fostering diversity and using the broad range of skills, experience and cultural backgrounds of staff.

Underpinning ARPANSA's 2012-15 WDP is an implementation plan outlining various initiatives, responsibilities and outcomes. The strategy sets standards for performance and accountability to meet the objectives of having a productive and supportive workforce by enabling individuals to achieve successful results in a supportive environment as well as assisting them to balance their work and personal responsibilities.

Prevention of workplace harassment and bullying

The agency's *Respect–ARPANSA Policy for the Prevention of Workplace Harassment and Bullying* seeks to minimise harassment and bullying that may arise in the workplace. The policy:

- provides information on informal and formal approaches to resolving claims of harassment and bullying (including the legislative framework)
- reinforces the role of the *APS Values* and *Code of Conduct*
- broadens the concept of harassment by including definitions of bullying behaviours
- clarifies the roles and responsibilities of managers and staff.

Table 8: Staff retention and turnover 2010-11 and 2011-12

Classification	Female				Male				VARIATION	
	Ongoing		Non-Ongoing		Ongoing		Non-Ongoing			
	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012
SES										
Commencement					+1					+1
Separation			-1						-1	
Executive Level 1-2										
Commencement	+2	+3			+2	+2	+4	+1	+8	+6
Separation		-1			-2	-4			-2	-5
APS Level 1–6										
Commencement	+2				+3		+3	+1	+8	+1
Separation	-1	-1			-1	-5			-2	-6

To re-enforce the policy ARPANSA regularly conducts workplace harassment and bullying training programs for all staff. These programs are mandatory and feedback from participants attending the training conducted in May 2012 was very positive.

ARPANSA has workplace harassment contact officers in both its New South Wales and Victorian offices and their role is to act as a source of information and support for staff. Workplace harassment contact officers are appointed by the CEO and undergo regular refresher training. They have management support to carry out their responsibilities.

Work/life balance

ARPANSA continues to promote a work environment that provides a reasonable work/life balance for all employees. These initiatives include access to flexible working arrangements, including

- flextime
- job-sharing
- part-time and home based work
- extensive leave provisions including:
  - 4-weeks annual leave each year with provision to take this leave at half pay and access to purchased annual leave
  - cumulative personal/carers leave
  - increased paid leave for maternity leave purposes of up to 22-weeks which can be taken at full or half pay, paid paternity/non primary care giver leave of up to 6 weeks and parental leave
  - study leave
  - a range of miscellaneous leave entitlements which can be taken with or without pay.

Employee support

Converge International is the provider of the Employee Assistance Program for ARPANSA employees in both Victoria and New South Wales. Assistance is available to all ARPANSA employees and their immediate families with personal or work related problems that might affect their work or life.

ARPANSA Staff Consultative Forum

ARPANSA's enterprise agreement continues to provide for a Staff Consultative Forum (SCF) as the key employee consultative body. The SCF comprises employees elected by staff and officials from unions that are party to the ARPANSA Agreement. The CEO is a member of SCF according to the revised Operating Procedures.

During the year, the SCF met on four occasions to discuss a range of issues relating to the management of ARPANSA. Agenda papers and outcomes of meetings were provided to all staff. Issues discussed during the reporting period included:

- the SCF Operating Procedures
- post-implementation review of the ARPANSA Reform process
- workplace diversity program
- ARPANSA Performance and Development System (APDS) training
- workplace harassment and bullying training;
- voluntary redundancy program
- election of Health and Safety representatives.

Workforce planning, staff turnover and retention

At 30 June 2012, ARPANSA employed 153 staff; 139 of whom were employed on an ongoing basis. These staff were divided between the agency's New South Wales (Miranda) (20.9%), ACT (Barton) (2%) and Victorian (Yallambie) offices (77.1%). More detailed information about the nature and break-up of ARPANSA's workforce, retention and turnover rates is set out in Tables 8 and 9.

Graduate recruitment program

While no new graduates were recruited during the reporting period, ARPANSA will assess the need for a further intake of graduates early in 2012-13. Should there be an opportunity to reactivate the graduate recruitment program, it is expected that the new graduate intake would commence in February 2014.

Table 9: Inoperative staff as at 30 June 2011 and 2012

Classification	Female				Male				TOTAL	
	Ongoing		Non-Ongoing		Ongoing		Non-Ongoing			
	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012
SES		1								1
Executive Level 1-2					1	1			1	1
APS Level 1–6										
Total		**1**			**1**	**1**			**1**	**2**

Employee surveys

As one of a number of agencies within the Department of Health and Ageing Portfolio, ARPANSA undertook two online surveys of employees during 2011-12 to gauge the organisational health of the agency. The surveys sought feedback from staff on a range of issues including:

- ARPANSA's organisational climate and culture
- quality of our leadership
- how well we communicate internally and with our clients
- effectiveness of our performance management system (APDS)
- occupational health and safety
- strength of our learning and development strategies
- prevention of bullying and harassment
- overall satisfaction levels with working in ARPANSA.

The surveys were based on a set of core questions which allow for trend type analysis to be established for previous as well future surveys. The surveys also included a range of open ended questions seeking feedback on a number of issues, including ways of improving ARPANSA's products and service delivery.

The 2012 surveys (which both received responses from just over 70% of agency staff) found that whilst most key indicators had remained broadly the same between the 2009 and 2010 surveys, overall survey results were slightly more positive in 2012. However, there are areas where actions and improvements are necessary, which will be addressed during the financial year 2012-13. Such actions will also be informed by a so-called 'pulse-check review', a scaled-down version of the Australian Public Service Commission's Capability Reviews, that will be performed to evaluate the outcomes of the organisational changes that were rolled out during 2011.

Statistics on staffing

Remuneration, statistics and staffing profile

All ARPANSA staff are employed under the *Public Service Act 1999*. The CEO is a full-time holder of a Public Office, whose salary and allowances are determined by the Remuneration Tribunal.

Statistics on staffing are set out in Tables 10 to 14.

Workplace agreements in ARPANSA

During 2011-12, ARPANSA provided terms and conditions of employment for its employees under its 2011-14 enterprise agreement or through common law contracts (CLCs) for its senior executive service (SES) employees.

The *ARPANSA Agreement 2011–2014* which came into operation on 22 December 2011 has a nominal expiry date of 30 June 2014. The agreement covers all employees of ARPANSA employed under the *Public Service Act 1999* below the SES level. The salary ranges for ARPANSA's classification levels are set out in Table 15.

Table 10: Staff by location, gender and classification

Classification	SES		EL 2		EL 1		APS 6		APS 5		APS 4		APS 3		APS 2		APS 1		Graduate		TOTAL	
	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012
New South Wales																						
Female	1	1	1	1	4	4	3	3	1	1	1	1	2	2	3	2	-	-	-	-	15	13
Male	-	1	6	7	10	10	3	2	-	-	-	-	-	-	-	-	-	-	-	-	19	20
Total	1	2	7	7	13	13	6	5	1	1	1	1	2	2	3	2	-	-	-	-	34	33
Victoria																						
Female	-		1	1	8	11	8	6	9	9	4	6	10	9	7	6	-	-	-	-	47	48
Male	1	2	18	17	20	19	18	20	11	10	2	1	4	1	-	-	-	-	-	-	74	70
Total	1	2	19	18	28	30	26	26	20	19	6	7	14	10	7	6	-	-	-	-	121	118
Australian Capital Territory																						
Female	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Male	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Total																						
Female	1	1	2	2	12	15	11	9	10	10	5	7	12	11	10	8	-	-	-	-	63	63
Male	1	3	24	24	30	29	21	22	11	10	2	1	4	1	-	-	-	-	-	-	93	90
TOTAL	**2**	**4**	**26**	**26**	**42**	**44**	**32**	**31**	**21**	**20**	**7**	**8**	**16**	**12**	**10**	**8**	**-**	**-**	**-**	**-**	**156**	**153**

During 2011-12, all substantive SES employees had their remuneration arrangements agreed through individual CLCs. Remuneration for SES employees on CLCs is based on ensuring that employees are rewarded according to the specialist skills and knowledge they bring to the agency and the extent to which they assist the agency to meet its corporate goals. CLCs are structured to ensure that the remuneration arrangements are flexible and in so doing, assist in recruitment and retention of these staff.

As at 30 June 2012, ARPANSA had approved CLCs for its three SES employees. The salary range available for SES employees on CLCs is from $171 298 to $174 623 per annum.

Enterprise agreement

As noted above, the agency's seventh-round enterprise agreement (*ARPANSA Agreement 2011-2014*) came into operation on 22 December 2011. The Agreement ballot was conducted by the Australian Electoral Commission on 25 November 2011. Over 80% of eligible staff voted which resulted in a 95% 'Yes' vote.

The agreement supports the promotion of a high performing culture and provides a positive contribution to ARPANSA's standing as the leading organisation in Australia for excellence in radiation protection and nuclear safety. The agreement assists staff in balancing their work and personal life and includes a competitive remuneration framework of pay and conditions.

The salary ranges for ARPANSA's classification levels are set out in Table 15.

Non-salary benefits

Under its enterprise agreement and CLC s, ARPANSA staff are able to seek access to a range of non-salary benefits including the following:

- access to a privately plated vehicle (SES employees only)
- flexible working arrangements, including flextime (APS Levels 1 to 6 only), job-sharing, part-time and home based work
- parental/maternity leave provisions
- a range of paid and unpaid leave options
- study assistance

Table 11: Staff by gender and classification

	Female		Male		TOTAL	
Classification	**June 2011**	**June 2012**	**June 2011**	**June 2012**	**June 2011**	**June 2012**
Graduate	-	-	-	-	-	-
APS Level 1	-	-	-	-	-	-
APS Level 2	10	8	-	-	10	8
APS Level 3	12	11	4	1	16	12
APS Level 4	5	7	2	1	7	8
APS Level 5	10	10	11	10	21	20
APS Level 6	11	9	21	22	32	31
Executive Level 1	12	15	30	29	42	44
Executive Level 2	2	2	24	24	26	26
SES Band 1	1	1	1	3	2	4
TOTAL	**63**	**63**	**93**	**90**	**156**	**153**

Table 12: Full-time equivalent (FTE) staff by gender and classification

	Female		Male		TOTAL	
Classification	**June 2011**	**June 2012**	**June 2011**	**June 2012**	**June 2011**	**June 2012**
Graduate	-	-	-	-	-	-
APS Level 1	-	-	-	-	-	-
APS Level 2	9.04	7.68	-	-	9.04	7.68
APS Level 3	12	10	4	1	16	11
APS Level 4	5	6.6	2	1	7	7.6
APS Level 5	9.69	8.69	11	10	20.69	18.69
APS Level 6	10.6	9	20.2	21.6	30.8	30.6
Executive Level 1	11.8	14.5	30	28.8	41.8	43.3
Executive Level 2	2	2	23.1	21.7	25.1	23.7
SES Band 1	1	0	1	3	2	3
TOTAL	**61.13**	**58.47**	**91.3**	**87.1**	**152.43**	**145.57**

- employee assistance program
- flexible remuneration packaging scheme.

Performance pay

The number of APS employees at each classification level who received performance pay during the reporting period:

- SES Band 1: 0
- Non SES: 3

The aggregated amount of performance pay for the agency as a whole year was $17 000.

The average bonus payment was $5 667.

Commonwealth Disability Strategy

The *Commonwealth Disability Strategy* is taken into account in ARPANSA's forward-planning and corporate planning processes.

Purchasing

ARPANSA's purchasing policies are outlined in the Chief Executive's Instructions and associated procedural rules, and reflect the principles of the *Commonwealth Procurement Guidelines – December 2008* (CPGs). Procurement activities for the year, complied with the policies and principles outlined in the CPGs.

ARPANSA Annual Procurement Plan was published on the AusTender website in June.

Asset management

ARPANSA manages non-financial assets totalling $28.7 million. The major categories are land and buildings and infrastructure plant and equipment. ARPANSA's capital investment plan is reviewed annually to ensure ongoing building maintenance and renovation; equipment purchases and IT infrastructure upgrades meet future research and operational requirements.

Consultants

During 2011-12, 12 new consultancy contracts were entered into involving total actual expenditure of $911 834. In addition, six ongoing consultancy contracts were active during the 2011-12 year, involving total actual expenditure of $399 680.

Table 13: Staff employed under the PS Act as at 30 June 2011 and 30 June 2012

	Full-time Ongoing		Full-time Non-Ongoing		Part-time Ongoing		Part-time Non-Ongoing		TOTAL	
	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012
Female	57	51	1	3	3	9	2	0	63	63
Male	81	77	8	9	3	2	1	2	93	90
TOTAL	**138**	**128**	**9**	**12**	**6**	**11**	**3**	**2**	**156**	**153**

The agency policy on selection and engaging consultants is in accordance with the CPGs, based on the core principle of value for money and underpinned by:

- encouraging competition by ensuring non-discrimination in procurement and using competitive procurement processes
- promoting the use of resources in an efficient, effective and ethical manner
- making decisions in an accountable and transparent manner.

ARPANSA engaged consultants where there was a requirement for specialist expertise that was not available within the agency, or where an independent assessment was required. The selection process included selection from a panel or direct engagement of a recognised or pre-eminent expert.

The annual report contains information about actual expenditure on contracts for consultancies. Information on the value of contracts and consultancies is available on the AusTender website www.tenders.gov.au.

Outlook for 2012-13

In keeping with the agency's *Strategic Directions 2012-2016*, ARPANSA will continue to develop its leaders and its workforce. ARPANSA is committed to building a high performance organisation and aligning human resource strategies with the agency's organisational direction.

The coming year will require the People & Culture (P&C) section to continue to focus on and develop initiatives centred on strategy, service delivery and service promotion:

- *Strategic initiatives*. Continue to align the P&C strategic direction with ARPANSA's business needs through:
  - » investing in human capital management with an emphasis on strengthening the agency's leadership and culture and organisational effectiveness
  - » facilitating and contributing to the outcomes delivered through the ARPANSA reform and restructure and post-implementation review processes
  - » developing a succession management strategy aimed at ensuring leadership continuity
  - » developing strategies aimed at addressing the key findings of the 2012 employee survey and the 2012 APSC employee census.
- *Service delivery initiatives*. Enhance the P&C section's business focus through:
  - » finalising the staffing outcomes flowing from the review of the agency's information management services
  - » improving consistency in the interpretation and application of employment conditions
  - » continuing the simplification/automation of P&C practices and procedures (eg: payroll).
- *Service promotion initiatives*. Increase ARPANSA's understanding of the P&C section's activities and strategies by:
  - » working more closely with section managers and staff across the agency
  - » creating and actively participating in external and internal fora and networks.

Table 14: Distribution of staff by Branch

	Female				Male					
	Ongoing		Non-Ongoing		Ongoing		Non-Ongoing		TOTAL	
Branch	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012	June 2011	June 2012
Office of the CEO	4	4	-	-	1	4	-	-	5	8
Legal Office	2	3	-	-	1	2	-	-	3	5
Radiation Health Services	20	22	1	1	29	29	2	1	52	53
Medical Radiation Services	5	4	1	1	12	10	2	5	20	20
Operations Services	11	9	1	0	23	19	1	1	36	29
Corporate Office	18	18	-	1	18	15	4	4	40	38
TOTAL	**60**	**60**	**3**	**3**	**84**	**79**	**9**	**11**	**156**	**153**

Table 15: Salary ranges as at 30 June 2012

APS Classification	Salary Range ($)
ARPANSA Graduate	55 709 – 72 556
APS Level 1	41 789 – 47 501
APS Level 2	48 926 – 53 710
APS Level 3	55 709 – 62 334
APS Level 4	64 205 – 67 091
APS Level 5	69 104 – 72 556
APS Level 6	74 731 – 85 481
Executive Level 1	92 323 – 106 226
Executive Level 2 lower	112 813 – 128 108
Executive Level 2 upper	133 232 – 143 099

Appendices

Appendix 1: Work health and safety

Work Health and Safety Committee

ARPANSA staff and management consult through the operation of the Work Health and Safety Committee (WHSC). The Committee is chaired by the Head of the Office of the CEO and made up of Health and Safety Representatives, deputy Health and Safety Representatives and management representatives of all Branches and Offices and meets every two months.

Work Health and Safety measures taken in 2011-12 include the following:

- Continuing work on a signage audit.
- Flushing of radioactive holding tanks which will be replaced by Radiopharmacy area tanks.
- Sealing of holding tanks.
- New fire evacuation practices and new emergency responses introduced and alarm system changed.
- Influenza immunisations for staff across all three campuses.
- New arrangements introduced to accommodate the changes to the *Work Health and Safety Act 2011* (WH&S Act).
- Training of Health and Safety Representatives in requirements under the new WH&S Act.
- Completion of Yallambie renovations and property services to better comply with the new WH&S Act.
- Implementation of compulsory OH&S training for all ARPANSA staff.

2011 work health & safety inspection schedule

Representatives of the WHSC conducted WHS inspections of all work areas within ARPANSA during the year. The inspections resulted in a number of corrective action requests being issued which were attended to by the relevant branch management.

Health and safety management arrangements

Health and Safety Management Arrangements have been in place in ARPANSA since late 2007. Available to all staff through the ARPANSA Intranet, the Arrangements deal with:

- roles and responsibilities
- workplace level consultation
- confidentiality of information
- organisational arrangements including dispute resolution
- implementation
- review.

ARPANSA operates two Designated Work Groups at the Yallambie campus and one at the Miranda campus each with a Health and Safety Representative and a Deputy.

Following the implementation of the WH&S Act in consultation with staff through Health and Safety and Deputy Health and Safety Representatives, it is intended to comprehensively review the Arrangements during 2012-13

Employee assistance

The *ARPANSA Employee Assistance Program* operated throughout the year provided on behalf of the Agency by Converge International as part of a contract with the Department of Health and Ageing.

Incidents or injuries

ARPANSA once again achieved a highly safe and healthy working environment with no lost time incidents or incidents requiring medical attention reported during the year. ARPANSA continues to maintain a strong safety culture evidenced by the number of Hazard/Near Miss Reports lodged.

Investigations or notices given

Consistent with the four previous financial years, no investigations were conducted or notices given during 2011-12 relevant to sections 29, 45 and 46 of the OHS (CE) Act prior to 1 January 2012 or sections 85, 90, 191, 195 and 198 of the WH&S Act from that date.

Appendix 2: Information Publication Scheme

Agencies subject to the *Freedom of Information Act 1982* (FOI Act) are required to publish information to the public as part of the *Information Publication Scheme* (IPS). This requirement is in Part II of the FOI Act and has replaced the former requirement to publish a section 8 statement in an annual report. Each agency must display on its website a plan showing what information it publishes in accordance with the IPS requirements.

ARPANSA as an Australian Government agency is subject to the FOI Act and is required to comply with the IPS provisions. ARPANSA has developed an agency plan in accordance with the IPS describing ARPANSA's compliance with the IPS provisions as required by s 8(1) of the FOI Act. The plan can be accessed at www.arpansa.gov.au/ips.cfm.

Feedback on this plan can be provided by contacting the FOI Coordinator at email: foi@arpansa.gov.au or by mailing to:

The FOI Coordinator
ARPANSA PO Box 655
MIRANDA NSW 1490
or by telephoning: (03) 9433 2211

Appendix 3: Advertising and market research

Forms of advertising

ARPANSA did not commission any work from creative advertising agencies, market research organisations, polling organisations or direct mail organisations. During 2011-2012 total expenditure on advertising and public notices amounted to $39 018 (inclusive of GST).

Details of payments of $11 900 and above (inclusive of GST), as required under section 311A of the *Commonwealth Electoral Act 1918*, are contained in Table 16.

Table 16: Details of payments of $11 900 and above (inclusive of GST) for advertising and public notices during 2011-12

Organisation	Purpose	Expenditure
Ad Corp	Tender and recruitment advertising	$39 018

Appendix 4: Ecologically sustainable development and environmental performance

The object of the ARPANS Act is to protect the health and safety of people and to protect the environment from the harmful effects of radiation. In accordance with the Act, ARPANSA takes into account the radiological impact on the environment in assessing licence applications from Commonwealth entities and their contractors.

The agency supports and promotes practices that can improve energy management and environmental practices within both the Sydney and Melbourne offices. ARPANSA has in place an Environment Policy and is committed to:

- complying with relevant Commonwealth and state environment legislation and with the Australian Government's environmental policies and initiatives
- implementing a continually improving standard of environmental performance and provide an environmentally sound workplace
- striving to develop an environmentally responsible culture across the agency by providing appropriate resources and training to build awareness and support initiatives
- integrating environmental, social and economic considerations in its decision making including decisions on purchasing, in contracting for goods and services and in any building work it undertakes
- encouraging openness, transparency and improved accountability by reporting its environmental management annual reports and engaging with the community
- implementing and maintaining an Environmental Management System aligned with the ISO 14001 Standard.

ARPANSA commenced stage two of a three stage building renovation project for the Melbourne facility on 23 January 2011. This project achieved Practical Completion on 26 April 2012 and not only delivered a more efficient workspace but also facilitated the removal of approximately 75 square meters of asbestos skylight and saw the replacement of 18 asbestos fire-doors. New electrical switchboards were installed to improve staff safety. Motion sensor and dimmable fluorescent lighting was also installed to reduce unnecessary power usage. All mechanical services including heating and cooling ducts were reconfigured to ensure best environmental efficiencies are achieved. Planning for stage three works has commenced however construction cannot be commenced until funding for that stage is finalised.

Appendix 5: Legal services directions

The legal services directions reflect the obligations imposed on Chief Executives by the *Financial Management and Accountability Act 1997* and emphasise the general requirement that Commonwealth resources be used efficiently and effectively.

Chief Executives are required to take responsibility for the proper recording and public reporting of their agency's legal services expenditure. Proper recording will enhance the ability of Chief Executives to engage in decision making about legal resources that complies with their legal obligation to use resources efficiently and effectively. Making publicly available records about expenditure will enhance transparency. In accordance with the Directions, the CEO has certified that:

- ARPANSA has appropriate systems and procedures in place to ensure compliance with the Directions
- ARPANSA has no record of any alleged, possible or determined breach of the Directions by this agency during the financial year.

Details of the legal services expenditure for the agency for 2011-12 are provided in Table 17.

Table 17: Legal services expenditure by ARPANSA for 2011-12

Legal Service	Expenditure (incl. GST)
Agency's total legal services expenditure	$898 280
Agency's total external legal services expenditure	$260 135
External expenditure on solicitors	-
External expenditure on counsel	-
Other disbursements on external legal services	-
Agency's total internal legal services expenditure	$638 145

Appendix 6: ARPANSA licensing activities

Table 18: Details of any breach of licence conditions by a licensee during the financial year of which the CEO is aware

Licensee	Licence Number	Nature of breach	TRIM Reference
Australian Customs and Border Protection Service	S0092	Breach of section 31(1) of the ARPANS Act for unauthorised possession and use of a class 4 laser on a forward looking infra-red device on an Australian Customs ship.	R12/04900
A licence holder was found in breach of section 30(2) of the ARPANS Act by failing to comply with licence conditions, which was subsequently determined to have minor safety implications. Due to the corrective actions undertaken by the licensee no enforcement action was considered necessary.			

Table 19: Facility licences as at 30 June 2012

Commonwealth entity	Licences held
Australian Customs and Border Protection Service	4
Australian Defence Force /Department of Defence	5
Australian National University	3
Australian Nuclear Science and Technology Organisation (ANSTO)	17
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	1
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	2
Department of Sustainability, Environment, Water, Population and Communities – Parks Australia	1
Total	**33**

Table 20: Source licences as at 30 June 2012

Commonwealth entity	Licences held
ANU Enterprise Pty Ltd	1
ASC Pty Ltd	1
Attorney-General's Department	1
Australian Crime Commission	1
Australian Customs and Border Protection Service	2
Australian Defence Force /Department of Defence	2
Australian Federal Police	1
Australian Institute of Marine Science	1
Australian National University	1
Australian Nuclear Science and Technology Organisation (ANSTO)	3
Australian Postal Corporation	1
Australian Quarantine and Inspection Service (AQIS)	1
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	2
Australian Securities and Investments Commission	1
Australian Sports Commission	1
Australian Trade Commission	1
Australian War Memorial	1
Bureau of Meteorology – Cape Grim	1
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	12
Decipha Pty Ltd	1
Department of Foreign Affairs and Trade	1
Department of Immigration and Citizenship	1
Department of Infrastructure and Transport	1
Department of Innovation, Industry, Science and Research – National Measurement Institute	1
Department of Parliamentary Services	1
Department of Regional Australia, Regional Development and Local Government – Indian Ocean Territories Health Service	1
Department of Resources Energy and Tourism - Geoscience Australia	1
Department of Resources Energy and Tourism - Geoscience Australia – Geospatial and Earth Monitoring Division	1
Department of Sustainability, Environment, Water, Population and the Communities – Australian Antarctic Division	1
Department of Sustainability, Environment, Water, Population and the Communities – Australian Antarctic Division, Polar Medicine	1

Table 20: Source licences as at 30 June 2012 (cont).

Commonwealth entity	Licences held
Department of Sustainability, Environment, Water, Population and the Communities – Supervising Scientist	1
Department of the Prime Minister and Cabinet	1
Family Court of Australia	1
Federal Court of Australia	1
Health Services Australia	1
High Court of Australia	1
Law Courts Limited	1
National Gallery of Australia	1
National Museum of Australia	1
Note Printing Australia	1
Reserve Bank of Australia	1
Royal Australian Mint	1
Silex Systems Ltd	1
Total number of licences	**60**

Appendix 7: Operations of the Radiation Health and Safety Advisory Council and Committees

Operations of the Radiation Health and Safety Advisory Council 2011-12

Council met on three occasions during the year (August 2011, December 2011 and April 2012) and considered a wide range of radiation protection and nuclear safety topics.

Council's 2009-11 triennium ended on 31 December 2011, and a new Council, as listed below, was appointed by the Minister for the 2012-14 triennium.

Chair:
Ms Sylvia Kidziak AM (NSW)

CEO ARPANSA:
Dr Carl-Magnus Larsson (NSW)

Person to represent the interests of the general public:
Emeritus Professor Ian Lowe (Qld)

Radiation Control Officers:
Mr Keith Baldry (SA), Mr Simon Critchley (Qld)

Nominee of the Chief Minister of NT:
Dr Stephen Skov (NT)

Up to 7 other Members:
Dr Roger Allison (Qld)
Ms Jill Fitch (SA)
Dr Brad Cassels (VIC)
Dr Denise Wheeler (Qld)
Ms Melissa Holzberger (Qld)
Mr Frank Harris (NT)
Professor Ray Kemp (Vic)

Summaries of the meetings as well as other relevant documentation can be found at www.arpansa.gov.au/AboutUs/Committees/rhsacmt.cfm.

Adoption of Codes of Practice and Standards

During the year, Council advised the CEO to adopt a safety guide developed by the Radiation Health Committee: S*afety Guide for the Use of Radiation in Schools – Part 2: Lasers*, which would be combined with the previously published P*art 1: Ionizing Radiation* (RPS 18).

Other issues considered

The August 2011 meeting was held at Parliament House, Canberra ACT with a focus on medical radiation practices. Council met with the Hon. Catherine King MP, Parliamentary Secretary for Health and Ageing and discussed a range of topics that related to Council's recent work. Ms King acknowledged the importance of Council's role in providing advice to the CEO of ARPANSA and thanked them for their work.

Council received a presentation on Human Factors and Safety Culture from Dr Rob Lee, former Director, Systems Safety & Communications, Australian Transport Safety Bureau and currently a member of the Nuclear Safety Committee (NSC). Council also received presentations from representatives of the Department of Health and Ageing and Health Workforce Australia on current government initiatives and activities being conducted that will support medical radiation practices. Council discussed a range of topics arising from the presentations including: health workforce future planning, eHealth implementation, diagnostic imaging reforms and the Radiation Oncology Reform Implementation Committee quality framework and practice standards. All parties agreed it was beneficial to take the opportunity to have joint discussion on these important matters.

At the meeting Council also:

- finalised the Council Strategic Directions for 2011-12. It was agreed that Constituency Building, Medical Radiation and Training would be the three priority areas. Council agreed that it was important to align the strategic directions of ARPANSA, Council, the Radiation Health Committee (RHC) and the NSC
- discussed their recent advice to the CEO on medical radiation matters which included four key recommendations where Council and ARPANSA can consider further work. The four recommendations included: the need for nationally consistent incident reporting; use of new technology with lower dose capabilities; proactive engagement with professional bodies to produce referral guidelines; and the expansion of the ARPANSA website to include links to relevant international reference material
- noted that as a result of the Fukushima accident, development of some work had been delayed.

The December 2011 meeting was held at ARPANSA's Miranda office. The Chair provided a triennium report noting this was the last meeting of the current triennium and appointment of new members was expected before January 2012. The main focus for the meeting was transport of radioactive materials noting the CEO's request for a Council statement on the matter. Council received presentations from:

- Dr Melanie Taylor (University of Western Sydney) on public perception of risk with particular reference to the transport of radioactive materials
- Mr Michael Angwin (CEO Australian Uranium Association) on the public perception of risk and how it impacted on the transport of uranium in Australia
- ARPANSA representatives who spoke on current transport issues in Australia and internationally, and security for the transport of radioactive materials.

Members discussed a range of topics arising from the presentations and collated a summary of matters to be provided to the incoming Council for consideration.

At the meeting Council also:

- discussed ARPANSA's draft Strategic Directions 2012-2016 document and noted the upcoming review of the ARPANS Act
- endorsed the proposed revised Radiation Protection Series (RPS) hierarchy presented by the RHC, recognising the need for the series to be aligned with the IAEA publications structure
- received a presentation on the newly formed Safety Analysis Section, noting that its role would include assessing safety culture at an organisation in a holistic manner.

The April 2012 meeting was held at ARPANSA's Miranda office. This was the first meeting of the 2012-14 triennium. The Council noted that the National Radioactive Waste Management Bill had recently passed through the Senate and that effective communication with the local community of any location finally accepted would be an important aspect of the licence application assessment process. The Council received presentations on previous experiences of communication with indigenous communities on radiation topics. This included the perspectives from the Maralinga rehabilitation project in the 1980-2000s, the mining industry in general and the Supervising Scientist Division in relation to Northern Territory uranium mines. Council was briefed on the development of ARPANSA's communication strategy and acknowledged ARPANSA's progress to date in the area of communication with both internal and external stakeholders.

At the meeting, the Council also:

- endorsed the continued use of the 2011-2012 strategic directions document prepared by the previous Council for the remainder of 2012. Considerable work had already been conducted in the three priority areas
- endorsed the *Safety Guide for the Use of Radiation in Schools – Part 2: Lasers*, which would be combined with the previously published *Part 1: Ionizing Radiation (RPS 18)*
- discussed the current activities of ARPANSA's scientific and regulatory branches, including the functions of the Australian Clinical Dosimetry Service (ACDS), development of national Diagnostic Reference Levels (DRLs) for radiology, and arrangements for ARPANSA's emergency response capability.

The Chair continued the practice of attending the RHC and NSC meetings aimed at assuring an understanding of work being conducted by Council and the committees. The Chair also met with the CEO of ARPANSA prior to each Council meeting for discussion on radiation matters both domestically and internationally.

Operations of the Radiation Health Committee 2011-12

The Radiation Health Committee met on three occasions at ARPANSA's office in Miranda, New South Wales: 13 14 July 2011, 9 November 2011 and 14 March 2012. The RHC's 2009-11 triennium ended on 31 December 2011, and a new committee, listed below, was appointed by the CEO for the 2012-14 triennium.

Chair:

Mr Keith Baldry (SA)

CEO of ARPANSA:

Dr Carl-Magnus Larsson (NSW)

Radiation Control Officers: (each State & Territory)
Mr Ross Bevan (ACT)
Associate Professor Brad Cassels (VIC)
Mr Simon Critchley (Qld)
Mr Len Potapof (NSW)
Mr Russell Robinson (NT)
Dr Barbara Shields (TAS)
Ms Hazel Upton (WA)

Nuclear Safety Committee representative:
Mr Robert Lyon (Qld)

Person to represent the interests of the general public:
Dr Peter Karamoskos (VIC)

Other members:
Dr Roslyn Drummond (VIC)
Dr Andrew Kerans (ACT)

Summaries of the meetings as well as other relevant documentation can be found at www.arpansa.gov.au/AboutUs/Committees/rhcmt.cfm.

Members of the IAEA Integrated Regulatory Review Service (IRRS) follow-up mission to ARPANSA, Mr Kaare Ulbak (Team Leader) and Mr John Le Heron, attended the November 2011 meeting. Mr Stuart Lillie of the National Radiation Laboratory, New Zealand, attended the July 2011 and March 2012 meetings as an observer by invitation.

National policy and publication development program

Part of the Committee's remit is to develop standards and guidance material that meets international best practice. At its July 2011 meeting, the Committee approved a proposal for a revision of the hierarchy of ARPANSA Radiation Protection Series publications relating to ionising radiation, including revised descriptions for document categories and explanation of the alignment with international publications. The current top level document RPS 1, *Recommendations and National Standard for Limiting Occupational Exposure to Ionizing Radiation (republished 2002)* is currently being reviewed and updated to incorporate recent changes to international best practice. A highlight for the year was the success of the RPS 1 forum held during The Australasian Radiation Protection Society Conference in October 2011. The Committee has identified the replacement of RPS 1 with two separate documents: *Fundamentals for Protection Against Ionizing Radiation* and a *Code of Practice for Planned Exposure Situations*, as a high priority project.

During the year, the Committee considered progress on development or revision of various publications. In July 2011 the Committee agreed to the development of two new RPS safety guides: one on radiation protection of the environment, and another on the site clearance/closure criteria for past and present activities. At its November 2011 meeting, the Committee agreed that the draft ARPANSA ELF Guidelines should be harmonised with recent international guidance, in particular the 2010 ICNIRP *Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz to 100 kHz)*.

At its July 2011 meeting, the Committee approved a draft *Safety Guide for the Use of Radiation in Schools – Part 2: Lasers* to be released for public consultation. At its March 2012 meeting, the Committee approved the final draft for publication and recommended that it be forwarded the Radiation Health and Safety Advisory Council for its recommendation on adoption. The published Safety Guide (RPS 18) comprises both Part 2: Lasers and the previously published Part 1: Ionizing Radiation.

The Committee was advised of progress on the suite of amendments proposed to be made to the *National Directory for Radiation Protection* (NDRP). At its July 2011 meeting, the Committee agreed to an interim revision of Schedule 13 of the NDRP, *National incident reporting framework*, to clarify the scope of incidents to be reported to the Australian Radiation Incident Register (ARIR). Subsequently, at its March 2012 meeting, the Committee endorsed a proposed project plan for a full review of the radiation incident reporting framework in Australia. Also at its March 2012 meeting, the Committee endorsed three recommendations for NDRP inclusions: exemptions for certain lighting products; additional authorisation criteria for chiropractors; and qualification/competency requirements for qualified experts as described in the Medical Code (RPS 14).

Other matters considered

At the July 2011 meeting, the Committee reviewed the annual summary report of radiation incidents reported to the ARIR for the 2010 calendar year. The Committee also considered interim statistics on radiation incidents reported to the ARIR as occurring in the 2011 calendar year at the March 2012 meeting.

The Committee endorsed a proposed ARPANSA *Radiation Security Advisor Certification Scheme*, for submission to the Australian Skills Quality Authority and in November 2011 the Committee published an RHC *Statement on Changes to Occupational Dose Limit for Lens of the Eye*.

The Committee became aware of a draft code of practice on naturally occurring radioactive material, being developed by Safe Work Australia (SWA) to support the mining chapter of the model Work Health and Safety Regulations. The Committee noted that there could be overlap with existing ARPANSA publications and requested that ARPANSA perform a gap analysis. A submission, which included the outcomes of the gap analysis showing that all relevant matters were already addressed in RPS publications, was sent to SWA on behalf of the RHC as part of the public comment process. ARPANSA and RHC representatives later met with SWA representatives and the matter was resolved to the satisfaction of all parties by the withdrawal of the SWA draft.

At each meeting, the Committee was briefed on international developments, including the IAEA publication program, and on IAEA, ICRP and UNSCEAR meetings. Committee members provided comments on several drafts of the IAEA Safety Standards Series, which had been issued to Member States for comment. The Committee considered reports from meetings of the Radiation Health and Safety Advisory Council, the Nuclear Safety Committee and the Transport Competent Authorities Forum.

RHC work plan

At its March 2012 meeting, the Committee reviewed the key activities set out in the RHC Strategic Directions and discussed the status of each current and proposed project. The committee reviewed its work plan, prioritising the projects for the new triennium. High priority projects include the replacement of RPS 1, finalisation of the ELF Guidelines, revision of the Near-Surface Disposal Code and radiation incident reporting arrangements. The Committee endorsed proposed actions for improving the management and progress of RHC projects. The Committee also endorsed a project plan to re-establish a working group to consider options for improving safety of the use of IPLs and lasers for cosmetic purposes.

Operations of the Nuclear Safety Committee 2011-12

The NSC met on three occasions during the financial year (September 2011, March 2012 and June 2012) to consider nuclear safety issues. All meetings were held at ARPANSA's Miranda offices. The NSC's 2009-11 triennium ended on 31 December 2011, and a new committee, listed below, was appointed by the CEO for the 2012-14 triennium.

Chair:

Dr Carl-Magnus Larsson (NSW) Note - The CEO will act as chair of the NSC for 2012.

Radiation Health Committee representative:

Dr Barbara Shields (TAS)

Local Government representative:

Mr Ian Drinnan (NSW)

Person to represent the interests of the general public:

Mr Christopher Tola (NSW)

Other Members:

Ms Kerrie Christian (NSW)
Mr Paul Dolan (Vic/NSW)
Dr Rob Lee (ACT)
Mr Robert Lyon (Qld)
Mr Don Macnab (NSW)
Em Prof Ian Polmear (Vic)
Dr Tamie Weaver (Vic)
Mr Peter Wilkinson (ACT).

Summaries of the meetings as well as other relevant documentation can be found at www.arpansa.gov.au/AboutUs/Committees/nscmt.cfm.

Topics discussed and reviewed by the NSC during this financial year include:

- Reports relating to the nuclear accident at Fukushima, Japan and its ongoing management. Discussions considered the impact of the accident and implications for the management of nuclear safety within Australia.
- ARPANSA regulatory guidance relating to the Periodic Safety Review (PSR) of nuclear installations. The Committee has also been briefed on and discussed ARPANSA's regulatory management of the ongoing PSR the 20 MW OPAL Reactor.
- ARPANSA regulatory guidance on the storage and disposal of radioactive waste.
- ARPANSA regulatory guidance regarding

the holistic management of safety. Holistic approaches look at the impact and integration of all influences to safety including technological systems, organisational controls and environments and human aspects of operation.

- ARPANSA regulatory guidance on the interpretation of ARPANS Regulation 51 which requires the CEO's approval before implementing a change with 'significant' implications for safety.
- Briefings and discussions on: the management of Australian Commonwealth Nuclear facilities including the 20 MW OPAL Reactor; Radiopharmaceutical production facilities; storage of Commonwealth radioactive waste and the care; maintenance and decommissioning of nuclear installations including the HIFAR and Moata reactors; and the National Medical Cyclotron.
- The reports and outcome of a review by the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Service of ARPANSA regulatory activities and capabilities.
- The outcome and implementation of ARPANSA's organisational reform process.

The Committee also undertook a tour of the nuclear facilities at ANSTO's Lucas Heights Science and Technology Centre and were briefed on ongoing and future projects at ANSTO that will be subject to regulatory assessment and oversight.

Appendix 8: Publications

Codes of Practice and Safety Guides

Australian Radiation Protection and Nuclear Safety Agency (2012). *Safety Guide for the Use of Radiation in Schools*, Radiation Protection Series No. 18 - republished to include Part 2: Lasers.

Australian Radiation Protection and Nuclear Safety Agency (2011) *Safety Guide for Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing*, Radiation Protection Series No. 9.1.

Australian Radiation Protection and Nuclear Safety Agency (2011) *National Directory for Radiation Protection*, Edition 6, Radiation Protection Series No. 6. -republished to include Amendment 5.

Technical reports

Long, S & Green, L (2011) *Radioactivity Enhancement Factors of Maralinga Soils*, ARPANSA Technical Report 157, November 2011.

Long, S (2012) *Maralinga Land and Environment Management Plan: ARPANSA Field Survey Report to Department of Resources, Energy & Tourism (DRET)* June 2012.

Conference papers

Burns, D T Lye, J E Roger, P & Butler, D J, (2012) 'Key comparison BIPM.RI(I)-K3 of the air-kerma standards of the ARPANSA, Australia and the BIPM in medium-energy x-rays' 2012 *Metrologia* 49 06007.

Bokor, I Ivanov, Z & Marks, P, (2012) 'A Comparison by use of a Certified 137Cs Source of the Accuracy of Clinical Dose Calibrators in Victorian Nuclear Medicine Practices', *ANZSNM Annual Scientific Meeting*, May 2012, Melbourne.

Dunn, L Kenny, J Lye, J Williams, I Lehmann, J & Johnston P (2012) 'Commissioning of Optically Stimulated Luminescence Dosimeters for use in the Australian Clinical Dosimetry Service', *Proceedings of IFMBE*, Beijing 2012.

Gies, P King, K Makin, J Henderson, S Dobinson, S & Javorniczky, J (2011) 'UVR Exposures in Australia are high: Can they be Reduced? *Australasian Radiation Protection Society Conference Conference*, Melbourne, October 2011.

Guilfoyle, R Martin, P (2011) Australian National Radiation Dose Register for Uranium Mining and Milling Industry Workers, *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Grzechnik, M (2012) Radiological Protection of Flora and Fauna throughout Australia – Developing a National Approach, *13th International Congress on the International Radiation Protection Association*, May 2012.

Hayton, A Johnston, P Baldas, J Marks, P Tingey, D Edmonds, K & Wallace, A (2012) 'Australian per caput doses from diagnostic imaging and nuclear medicine', *Proceedings of IRPA 13*, www.irpa13glasgow.com/information/downloads/.

Javorniczky, J Gies, P Lock, J Carpenter, J & King, K (2011) 'Ultraviolet Radiation and Blue Light Emissions from Compact Fluorescent Lights' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Karipidis K (2011) 'ELF and childhood leukaemia' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

King, K McLennan, A Javorniczky, J & Gies, P (2011) 'Introduction of a New Method of Reporting Ultraviolet Radiation Dose' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Larsson, C-M (2011) 'Introduction to the RPS1 Forum – why are we revising RPS1?' *Australasian Radiation Protection Society Conference*, RPS1 Forum, Melbourne, October 2011.

Larsson, C-M (2011) 'The Biological Basis for Environmental Radiation Protection' *ICRP Symposium*, Bethesda, October 2011.

Larsson, C-M (2011) 'Japan Nuclear Accident - Australia's Response' *Australasian Radiation Protection Society Conference, Melbourne*, October 2011.

Marks, P Wallace, A Edmonds, K Hayton, A & Tingey, D (2012) 'Radiation Protection of the Australian Public via the Introduction of a National Diagnostic Reference Level Scheme' *Proceedings of IRPA 13*, www.irpa13glasgow.com/information/downloads/

Martin, L (2012) 'Country report on EMF activities' *World Health Organization International Advisory Committee Annual Meeting*, Geneva.

Martin, P & Tinker, R (2011) 'Development of a Safety Guide on Methods for Monitoring, Assessing and Recording Radiation Doses in Mining and Mineral Processing' *AusIMM International Uranium Conference*, Adelaide, June 2011.

Martin, P Lange, K Ishimori, Y Mayya, Y S Phaneuf, M & Fesenko, S (2011) 'Measurement and Calculation of Radon Releases from NORM Residues: Development of a new IAEA Document' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

O'Brien, R & Dessent, K, (2011) 'Exemption Issues' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

O'Brien, R, (2011) 'General Assessment Methodology for NORM and Legacy Sites' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011

O'Brien, R (2012) 'Management of Operational and Existing Exposure Situations Due to NORM and Natural Radiation: Radiation Protection and Scientific Challenges' *13th International Congress on the International Radiation Protection Association*, May 2012.

O'Brien, R Woollett, S & Doering,D (2011) 'Control by Design' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Orr, B & Grzechnik, M (2011) 'Emergency Modelling of Airborne Releases from Fukushima Dai-ichi' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Tinker, R (2011) 'Japan Nuclear Accident Australia's Response' *2nd Annual Professional Development Symposium*, Crisis and Opportunity, The Changing Face of Environmental Health, Environmental Health Australia, Halls Gap, Victoria, October 2011.

Tinker, R Solomon, S &Orr, B (2011) 'Radiation Dose Estimates to Workers and Members of the Public from the Dai-ichi NPP Accident' *Australasian Radiation Protection Society Conference*, Melbourne, October 2011.

Wallace A B, (2012) 'Radiation dose dependence on MDCT platform and acquisition protocols or CT coronary angiography' *Journal of Medical Imaging and Radiation Oncology*, 56, 1-3.

Weiss, W Larsson, C-M McKenney, C Minon, J P Mobbs, SF Schneider, T Umeki, H Hilden, W, Pescatore, C & Vesterlind, M (2012) 'ICRP Recommendations on Radiological Protection in Geological Disposal of Long-lived Solid Radioactive Waste'' *13th International Congress on the International Radiation Protection Association*, May 2012.

Williams, I M Kenny J, Lye, J E & Lehman, J, (2012) 'The Australian Clinical Dosimetry Service: The development and delivery of a national dosimetry audit', *Proceedings of IFMBE Beijing 2012*.

Presentations and seminars

Bokor, I Ivanov, Z and Marks, P (2012) 'A Comparison by use of a Certified 137Cs Source of the Accuracy of Clinical Dose Calibrators in Victorian Nuclear Medicine Practices' *ANZSNM Annual Scientific Meeting*, May 2012, Melbourne.

Brown, J M C McKean, N Solomon, S Tinker, R A Fairchild, R W Wright T & Tjong, L (2011) 'A Semi-Automated Nuclear Track Etch Counting System for CR-39 Dosimeters' *AARST International Radon Symposium*, Orlando Florida, October 2011.

Dawson, P Orr, B Gailis, R Meehan, A Wain, A Llaya, O Hick, R Skvortsov, A Tinker, R & Grzechnik, M, (2012) '*Evaluation of Hazardous Atmospheric Plume Modelling Software*' *Defence Science and Technology Organisation, Department of Defence, DSTO-TR-2679*, March 2012.

Dunn, L et al (2011) 'Initial experience with Optically Stimulated Luminescence Dosimeters (OSLD)' William Buckland Radiotherapy Centre, Melbourne, 21 October 2011.

Hayton, A Wallace, A Marks, P Baldas, J & Johnston, P (2012) 'Australian per capita dose from diagnostic imaging and nuclear medicine' *AINSE RADIATION Conference 2012: Radioprotection: Past, Present and Future*, 15 -17 February 2012, Lucas Heights.

Johnston, P N (2011) 'Japan Nuclear Accident: Australia's Response', *Seminar at the Radiation Protection Institute of Ireland*, Dublin, 29 August 2011.

Johnston, P N (2011) 'Japan Nuclear Accident: Australia's Response', *Seminar at the Australian Synchrotron*, Melbourne, 29 September 2011.

Johnston, P N (2011) 'The accident at the Fukushima Dai-ichi Power Plant: ARPANSA's response and consequences' *ANZSNM Conference*, Melbourne, 22 October 2011.

Johnston, P N (2012) 'Fukushima – one year on: Health, environment, nuclear safety and nuclear security', *Seminar at Institute of Reference Materials and Measurements*, Mol, Belgium, 19 March 2012.

Johnston, P N (2012) 'Findings of the 2011 Maralinga Dose Reconstruction', *Presentation to the Oak Valley Community of Maralinga Tjarutja*, 7 June 2012.

Johnston, P N (2012) 'Fukushima one year on - Health, environment, nuclear safety and nuclear security' *NEA's Committee on Radiation Protection and Public Health (CRPPH)*, April 2012.

Kenny, J et al, (2011) The Australian Clinical Dosimetry Service, (ACDS), Royal Brisbane Hospital, QLD *ACPSEM Branch Symposium*, 2 August 2011.

Kenny, J et al (2011) 'Progress to Date and Current Developments', *SA/NT ACPSEM branch meeting*, Royal Adelaide Hospital, 28 October 2011.

Larsson, C-M, Solomon, S & Castle, L (2012) 'Fukushima one year on - What happened and why, implications for the international and regional nuclear safety and security regime' *ARPANSA Seminar Series, Australian Federal Police HQ Conference Centre*, Canberra, March 2012.

Larsson C-M (2011) 'Lessons Learned from the nuclear leak in Japan' *Seminar - Emergency Response & Management Australasia*, September 2011.

Lehmann, J et al (2012) 'Radiation Therapists and Level III Audits by the Australian Clinical Dosimetry Service' *ASMMAIR*, Sydney, 18 April 2012.

Lehmann, J et al (2012) 'Designing Level III Audits for Generic Auditing: The Australian Experience', *World Congress of Medical Physics*, Beijing, China, 29 May 2012.

Lehmann, J et al (2012) 'Designing Level III Audits for Generic Auditing: The Australian Experience', *Beijing National Cancer Centre*, Beijing, China, 4 June 2012.

Lehmann, J et al (2012) The Australian Clinical Dosimetry Service, (ACDS) *San Francisco and Bay Area Chapter of the AAPM*, 14 June 2012.

Orr, B (2011) 'ARGOS in Australia and RIMPUFF theory' *DSO ARGOS training course*, Singapore, August 2011.

Orr, B (2012) 'Development Report – *Australia' ARGOS user group meeting*, Oslo Norway (via video-conference), April 2012.

Orr, B Moseley, A Tinker, R Jespen, D & de Kool,M (2011) 'Australian Assessment of NPE10 Exercise' *NDC Evaluation Workshop*, Bucharest Romania, October 2011.

Orr, B (2011) 'Status Report – Australia' *ARGOS consortium meeting*, Copenhagen Denmark, September 2011.

Wallace, A Hayton, A Marks, P Edmonds, K Tingey, D & Johnston, P (2012) 'Australian adult diagnostic reference levels for multidetector CT' (poster), *Dose Datamed 2*, Athens.

Williams, I M et al (2011) 'The Australian Clinical Dosimetry Service (ACDS)' Royal Brisbane Hospital, QLD *ACPSEM Branch Symposium*, 2 August 2011.

Williams, I M et al (2011) The Australian Clinical Dosimetry Service, (ACDS), *EPSM-ABEC annual meeting*, Darwin, 7 August 2011.

Williams, I M et al (2011) 'Verification of Practice: Maximum safety and minimum risk for patient, Beyond Bricks and Mortar', *DoHA Workshop*, Melbourne, 11 August 2011.

Williams, I M et al (2011) 'The Australian Clinical Dosimetry Service (ACDS)' St Luke's Hospital, Dublin, Ireland, 30 August 2011.

Williams, I M et al (2011) 'The Australian Clinical Dosimetry Service (ACDS)' National Physical Laboratories, London, United Kingdom, 8 September 2011.

Williams, I M et al (2011) 'Do you believe the dosimetry in your planning computer?' *RANZCR Annual Scientific Meeting*, Melbourne, 8 October 2011.

Williams, I M et al (2012) 'The Australian Clinical Dosimetry Service (ACDS)' *AINSE*, ANSTO Lucas Heights, 15 February 2012.

Williams, I M et al (2012) 'The Australian Clinical Dosimetry Service (ACDS)' *World Congress of Medical Physics, Beijing*, China, 27 May 2012.

Williams, IM et al (2012) 'The Australian Clinical Dosimetry Service (ACDS)' *Beijing National Cancer Centre*, Beijing, China, 4 June 2012.

Williams, I M et al (2012) 'The Australian Clinical Dosimetry Service (ACDS)' *The Chinese National Metrology Institute*, 5 June 2012.

Journal Articles

Brady, Z Cain, T M & Johnston, P N (2011) 'Differences in using the International Commission on Radiological Protection's Publications 60 and 103 for determining effective dose in paediatric CT examinations' *Radiation Measurements* 46(12):2031-2034 (2011).

Brady, Z Cain, T M & Johnston, P N 'Paediatric CT imaging trends in Australia' *Journal of Medical Imaging and Radiation Oncology* 55:132-142 (2011).

Brady, Z Cain, T M & Johnston, P N (2012) 'Comparison of organ dosimetry methods and effective dose calculation methods for paediatric CT' *Australas Phys Eng Sci Med* 35:117–134 (2012).

Brown, J Solomon, S & Tinker, R (2011) 'Development of an energy discriminate CR-39® nuclear track etch dosimeter for Radon-220 gas measurements' *Journal of Environmental Radioactivity*, Volume 102, issue 10, October 2011.

Burns, D T Lye, J E Roger, P & Butler, D J (2012) 'Key comparison BIPM.RI(I)-K3 of the air-kerma standards of the ARPANSA, Australia and the BIPM in medium-energy x-rays', D, 2012 *Metrologia* 49 06007.

Burns, D T Allisy, P J Butler, D Lye, J & Webb, D (2012) 'Comparison of the standards for absorbed dose to water of the ARPANSA and the BIPM for ^{60}Co γ radiation', 2012 *Metrologia* 49 06009.

Dunn, L Kron, T Johnston, P N McDermott, L N Taylor L Callahan J & Franich, R D 'A programmable motion phantom for quality assurance of motion management in radiotherapy' *Australas Phys Eng Sci Med* 35:93-100 (2012).

Gies, P & McLennan, A (2012) 'Ready to wear Sun Protection: Clothing fits the bill' *US Skin Cancer Foundation Journal* Vol. XXX: 70-72.

Kessler, C Burns, D T, Allisy, P J, Butler, D Lye J & Webb, D (2012) 'Comparison of the standards for absorbed dose to water of the ARPANSA and the BIPM for ^{60}Co γ radiation', 2012 *Metrologia* 49 06009.

Klekociuk, A R Tully, M B Alexander, S P Dargaville, R J Deschamps, L L Fraser, P J Gies, H P Henderson, S I Javorniczky, J Krummel, P B Petelina, S V, Shanklin, J D Siddaway, J M Stone, K A (2011) 'The Antarctic ozone hole during 2010'. *Australian Meteorological and Oceanographic Journal* 61: 253–267.

Martin, L & Karipidis K, (2012) Report on EMF activities in Australia during 2010-11, World *Health Organization, International EMF Project.*

Oliver, C P Butler, D J & Webb, D V (2012) 'The Australian radiation protection and nuclear safety agency megavoltage photon thermoluminescence dosimetry postal audit service 2007–2010' *Australasian Physical & Engineering Sciences in Medicine*, March 2012, Volume 35, Issue 1, pp 105-108.

Wallace, A B (2012) 'Radiation dose dependence on MDCT platform and acquisition protocols for CT coronary angiography' *Journal of Medical Imaging and Radiation Oncology*, 56, 1-3.

Appendix 9: Financial statements for the year ended 30 June 2012

Australian National Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Parliamentary Secretary for Health and Ageing

I have audited the accompanying financial statements of the Australian Radiation Protection and Nuclear Safety Agency for the year ended 30 June 2012, which comprise: a Statement by the Chief Executive and Chief Financial Officer; Statement of Comprehensive Income; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies; and Notes to and Forming Part of the Financial Statements including a Summary of Significant Accounting Policies.

Chief Executive's Responsibility for the Financial Statements

The Chief Executive of the Australian Radiation Protection and Nuclear Safety Agency is responsible for the preparation of financial statements that give a true and fair view in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997*, including the Australian Accounting Standards, and for such internal control as is necessary to enable the preparation of the financial statements that give a true and fair view and 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 have conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the 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 Australian Radiation Protection and Nuclear Safety Agency'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 Radiation Protection and Nuclear Safety Agency's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made by the Chief Executive of the Australian Radiation Protection and Nuclear Safety Agency, as well as evaluating the overall presentation of the financial statements.

GPO Box 707 CANBERRA ACT 2601
19 National Circuit BARTON ACT 2600
Phone (02) 6203 7300 Fax (02) 6203 7777

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 Radiation Protection and Nuclear Safety Agency:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability 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 Radiation Protection and Nuclear Safety Agency's financial position as at 30 June 2012 and of its financial performance and cash flows for the year then ended.

Australian National Audit Office

S. Buchanan

Serena Buchanan
Audit Principal

Delegate of the Auditor-General
Canberra

14 September 2012

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)

Financial Statements - 30 June 2012

STATEMENT BY THE CHIEF EXECUTIVE AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2012 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 *Financial Management and Accountability Act 1997,* as amended.

Signed.....

Carl-Magnus Larsson
Chief Executive

14 September 2012

Signed.....

George Savvides
Chief Financial Officer

14 September 2012

ARPANSA
STATEMENT OF COMPREHENSIVE INCOME
for the period ended 30 June 2012

	Notes	2012 $	2011 $
EXPENSES			
Employee benefits	3A	**17,917,929**	16,381,820
Suppliers expenses	3B	**8,502,966**	10,798,810
Depreciation and amortisation	3C	**2,542,795**	2,361,065
Write-down and impairment of assets	3D	**172,509**	15,645
Foreign exchange losses	3E	**535**	658
Total expenses		**29,136,734**	29,557,998
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	4A	**6,715,124**	9,612,120
Licence fees	4B	**3,839,420**	3,827,912
Total own-source revenue		**10,554,544**	13,440,032
Gains			
Other gains	4C	**54,250**	53,000
Total gains		**54,250**	53,000
Total own-source income		**10,608,794**	13,493,032
Net cost of (contribution by) services		**18,527,940**	16,064,966
Revenue from Government	4D	**16,130,000**	13,735,130
Deficit		**(2,397,940)**	(2,329,836)
OTHER COMPREHENSIVE INCOME			
Changes in asset revaluation reserves		**3,431,286**	429,000
Total other comprehensive income		**3,431,286**	429,000
Total comprehensive income		**1,033,346**	(1,900,836)

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

ARPANSA
BALANCE SHEET
as at 30 June 2012

	Notes	2012 $	2011 $
ASSETS			
Financial Assets			
Cash and cash equivalents	5A	**1,655,881**	1,601,552
Trade and other receivables	5B	**1,610,080**	4,851,866
Other financial assets	5C	**81,703**	395,323
Total financial assets		**3,347,664**	6,848,741
Non-Financial Assets			
Land and buildings	6A	**19,229,600**	12,731,828
Property, plant and equipment	6B,6F	**6,702,310**	7,004,296
Intangibles	6C,6G	**798,005**	838,911
Inventories	6D	**1,489,587**	1,718,336
Other non-financial assets	6E	**459,488**	497,198
Total non-financial assets		**28,678,990**	22,790,569
Total assets		**32,026,654**	29,639,310
LIABILITIES			
Payables			
Suppliers	7A	**1,378,077**	1,839,516
Other payables	7B	**1,821,394**	2,848,878
Total payables		**3,199,471**	4,688,394
Provisions			
Employee provisions	8	**5,228,201**	4,738,280
Total provisions		**5,228,201**	4,738,280
Total liabilities		**8,427,672**	9,426,674
Net assets		**23,598,982**	20,212,636
EQUITY			
Contributed equity		**9,120,000**	6,767,000
Reserves		**9,129,779**	5,698,493
Retained surplus		**5,349,203**	7,747,143
Total equity		**23,598,982**	20,212,636

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

ARPANSA
STATEMENT OF CHANGES IN EQUITY
for the period ended 30 June 2012

	Retained Earnings		Asset Revaluation Reserves		Contributed Equity/Capital		Total Equity	
	2012	2011	**2012**	2011	**2012**	2011	**2012**	2011
	$	$	**$**	$	**$**	$	**$**	$
Opening balance								
Balance carried forward from previous period	**7,747,143**	10,076,979	**5,698,493**	5,269,493	**6,767,000**	4,624,000	**20,212,636**	19,970,472
Adjusted opening balance	**7,747,143**	10,076,979	**5,698,493**	5,269,493	**6,767,000**	4,624,000	**20,212,636**	19,970,472
Comprehensive income								
Other comprehensive income - Changes in asset revaluation reserves	**-**	-	**3,431,286**	429,000	**-**	-	**3,431,286**	429,000
Deficit for the period	**(2,397,940)**	(2,329,836)					**(2,397,940)**	(2,329,836)
Total comprehensive income	**(2,397,940)**	(2,329,836)	**3,431,286**	429,000	**-**	-	**1,033,346**	(1,900,836)
Contributions by Owners								
Departmental capital budget	**-**	-	**-**	-	**2,353,000**	2,143,000	**2,353,000**	2,143,000
Sub-total transactions with owners	**-**	-	**-**	-	**2,353,000**	2,143,000	**2,353,000**	2,143,000
Closing balance as at 30 June	**5,349,203**	7,747,143	**9,129,779**	5,698,493	**9,120,000**	6,767,000	**23,598,982**	20,212,636

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

ARPANSA
CASH FLOW STATEMENT
for the period ended 30 June 2012

	Notes	2012 $	2011 $
OPERATING ACTIVITIES			
Cash received			
Appropriations		**18,085,130**	**13,982,000**
Sales of goods and rendering of services		**12,148,793**	**14,259,184**
Net GST received		**763,107**	**233,595**
Total cash received		**30,997,030**	**28,474,779**
Cash used			
Employees		**(17,443,603)**	**(15,849,540)**
Suppliers		**(10,512,005)**	**(10,590,038)**
Total cash used		**(27,955,608)**	**(26,439,578)**
Net cash from operating activities	9	**3,041,422**	**2,035,201**
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant, equipment and intangibles		**(5,340,093)**	**(5,418,553)**
Total cash used		**(5,340,093)**	**(5,418,553)**
Net cash (used by) investing activities		**(5,340,093)**	**(5,418,553)**
FINANCING ACTIVITIES			
Cash received			
Contributed equity		**2,353,000**	**2,143,000**
Total cash received		**2,353,000**	**2,143,000**
Net cash from financing activities		**2,353,000**	**2,143,000**
Net (decrease) increase in cash held		**54,329**	**(1,240,352)**
Cash and cash equivalents at the beginning of the reporting period		**1,601,552**	**2,841,904**
Cash and cash equivalents at the end of the reporting period	5A	**1,655,881**	**1,601,552**

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

ARPANSA
SCHEDULE OF COMMITMENTS
as at 30 June 2012

	2012	2011
BY TYPE	**$**	$
Commitments receivable		
GST recoverable on commitments	**(181,696)**	(361,781)
Total commitments receivable	**(181,696)**	(361,781)
Capital commitments		
Land and buildings	**-**	1,349,541
Infrastructure, plant and equipment	**501,871**	744,938
Total capital commitments	**501,871**	2,094,479
Other commitments		
Operating leases	**661,752**	1,036,486
Other commitments	**835,036**	848,620
Total other commitments	**1,496,788**	1,885,106
Net commitments by type	**1,816,963**	3,617,804
BY MATURITY		
Other commitments receivable		
One year or less	**(152,741)**	(301,510)
From one to five years	**(28,955)**	(60,271)
Total other commitments receivable	**(181,696)**	(361,781)
Commitments payable		
Capital commitments		
One year or less	**501,871**	2,094,479
From one to five years	**-**	-
Total capital commitments	**501,871**	2,094,479
Operating lease commitments		
One year or less	**395,002**	400,885
From one to five years	**266,750**	635,601
Total operating lease commitments	**661,752**	1,036,486
Other commitments		
One year or less	**783,283**	821,245
From one to five years	**51,753**	27,374
Total other commitments	**835,036**	848,619
Net commitments by maturity	**1,816,963**	3,617,803

NB: Commitments are GST inclusive where relevant.

Land and buildings - contractual payments for buildings under construction

Infrastructure plant and equipment - contractual payments for computer and scientific equipment

Operating leases are effectively non-cancellable and comprise:

Leases for office accommodation.
Lease payments are subject to annual increase as per the lease. The lease term is 4 years.

Agreements for the provision of motor vehicles to senior executive officers.

No contingent rentals exist. There are no renewal or purchase options available to the Agency.

Other commitments - contracts for the procurement of goods and services

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

ARPANSA

SCHEDULE OF CONTINGENCIES

as at 30 June 2012

	2012	2011
	$	$
Total contingent assets	**-**	-
Total contingent liabilities	**-**	-
Net contingent assets (liabilities)	**-**	-

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

NOTES TO AND FORMING PART OF THE FINANCIAL STATEMENTS
for the period ended 30 June 2012

Note 1: Summary of Significant Accounting Policies

1.1 Objectives of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)

ARPANSA is an Australian Government controlled entity. It is a not-for-profit entity. The objectives of ARPANSA are described in the body of this Annual Report.

The Agency is structured to meet one Outcome:
"Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, sevices and regulation."

ARPANSA's activities contributing toward the outcome are classified as departmental. Departmental activities involve the use of assets, liabilities, revenues and expenses controlled or incurred by the Agency in its own right.

The continued existence of the Agency in its present form and with its present programs is dependent on Government policy and on continuing funding by Parliament for the Agency's administration and programs.

1.2 Basis of Preparation of the Financial Report

The financial statements and notes are required by section 49 of the *Financial Management and Accountability Act 1997* and are general purpose financial statements.

The financial statements and notes have been prepared in accordance with:

a) Finance Minister's Orders (or FMOs) for reporting periods ending on or after 1 July 2011; and
b) Australian Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial report has been prepared on an accrual basis and is in accordance with historical cost convention, except for certain assets and liabilities 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 statements are presented in Australian dollars and values are rounded to the nearest dollar.

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 the Agency or 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 contract 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**.**

1.3 Significant Accounting Judgements and Estimates

In the process of applying the accounting policies listed in this note, ARPANSA has made the following judgements that have the most significant impact on the amounts recorded in the financial statements:

- The fair value of land has been taken to be the market value of similar land as determined by an independent valuer. However, ARPANSA's buildings are purpose built and may in fact realise more or less in the market and hence are valued at depreciated replacement cost.

- The long service leave liability is calculated using the shorthand method developed by the Australian Government Actuary. This method is impacted by fluctuations in the Commonwealth Government 10 year Treasury Bond rate.

No accounting assumptions or estimates have been identified that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next accounting period.

1.4 Changes in Australian Accounting Standards

Adoption of new Australian Accounting Standard requirements

No accounting standard has been adopted earlier than the application date stated in the standard. New standards, revised or amending standards and interpretations 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 the Agency.

Future Australian Accounting Standard requirements

New standards, revised or amending standards and interpretations 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 the Agency.

1.5 Revenue

Revenue from Government

Amounts appropriated for departmental appropriations for the year (adjusted for any formal additions and reductions) are recognised as revenue from Government when the Agency gains control of the appropriation, except for certain amounts that relate to activities that are reciprocal in nature, in which case revenue is recognised only when it has been earned.

Section 56 (3) of the *Australian Radiation Protection and Nuclear Safety Act 1998* (the Act), requires that money appropriated by the Parliament be transferred to the special account (notes 5A and 16 refer).

Appropriations receivable are recognised at their nominal amounts.

Licence Fees

Under paragraph 34(b) of the Act, an application for a licence must be accompanied by a fee prescribed in the regulations. Revenue for licence applications is recognised when an application for a licence is received.

Revenue for annual licence fees is recognised when a licence is issued to the licensee.

Other Types of Revenue

Revenue from the sale of goods is recognised when:

a) The risks and rewards of ownership have been transferred to the buyer;

b) The Agency retains no managerial involvement nor effective control over the goods;

c) The revenue and transaction costs incurred can be reliably measured; and

d) It is probable that the economic benefits associated with the transaction will flow to the Agency.

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date. The revenue is recognised when:

a) The amount of revenue, stage of completion and transaction costs incurred can be reliably measured; and

b) The probable economic benefits associated with the transaction will flow to the Agency.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at end of reporting period. Allowances are made when collectability of the debt is no longer probable.

The Agency has received an amount of $42,545 (2011: $0) under the Parental Leave Payments Scheme.

1.6 Gains

Resources Received Free of Charge

Resources received free of charge are recognised as gains when and only when a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Resources received free of charge are recorded as either revenue or gains depending on their nature.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised as gains at their fair value when the asset qualifies for recognition, unless received from another Government entity as a consequence of a restructuring of administrative arrangements. (Refer Note 1.7)

Sale of Assets

Gains from disposal of assets are recognised when control of the asset has passed to the buyer.

1.7 Transactions with the Government as Owner

Equity Injections

Amounts appropriated which are designated as 'equity injections' for a year (less any formal reductions) and Departmental Capital Budgets (DCBs) are recognised directly in contributed equity.

Restructuring of Administrative Arrangements

Net assets received from or relinquished to another Government entity under a restructuring of administrative arrangements are adjusted at their book value directly against contributed equity.

1.8 Employee Benefits

Liabilities for 'short-term employee benefits' (as defined in AASB 119 *Employee Benefits*) and termination benefits due within twelve months of the end of the reporting period are measured at their nominal amounts.

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

Other long-term employee benefit liabilities are measured as net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

Leave

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Agency is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration at the estimates salary rates that will be applied at the time the leave will be taken, including the Agency's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of employees as at 30 June 2012. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation

The majority of staff of ARPANSA are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap), and the Australian Government Employee Superannuation Trust (AGEST). There are a small number of staff covered under various other superannuation schemes.

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme. The AGEST Superannuation Trust is an industry fund which was previously the Australian Government Default Superannuation fund for non-ongoing employees.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported by the Department of Finance and Deregulation as an administered item.

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

The liability for superannuation recognised as at 30 June represents outstanding contributions for the final fortnight of the year.

1.9 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Where an asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

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

1.10 Borrowing Costs

All borrowing costs are expensed as incurred.

1.11 Cash

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

a) cash on hand;
b) cash held by outsiders; and
c) cash in special accounts.

1.12 Financial assets

The Agency classifies its financial assets in the following categories:

a) financial assets at fair value through profit or loss;
b) held-to-maturity investments;
c) available-for-sale financial assets; and
d) 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 at transaction date. ARPANSA only holds "loans and receivables"

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 exactly 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 that are recognised at fair value through profit or loss.

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 the end of each reporting period.

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 - if there is objective evidence that an impairment loss on an available-for-sale financial asset has been incurred, the amount of the difference between its cost, less principal repayments and amortisation, and its current fair value, less any impairment loss previously recognised in expenses, is transferred from equity to the statement of comprehensive income.

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.

1.13 Financial liabilities

Financial liabilities are classified as either financial liabilities "at fair value through profit or loss" or 'other liabilities'. Financial liabilities are recognised and derecognised at transaction date. The Agency only holds "other liabilities"

Other Liabilities

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).

1.14 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.

1.15 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 income 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.

1.16 Property, Plant and Equipment

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the balance sheet, except for purchases costing less than $2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

Revaluations

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

Asset class	**Fair value measured at:**
Land	Market value
Buildings exc. leasehold improvements	Depreciated replacement cost
Leasehold improvements	Depreciated replacement cost
Plant & equipment	Market value

Following initial recognition at cost, property plant and equipment are carried at fair value less subsequent 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 in the surplus/deficit. Revaluation decrements for a class of assets are recognised directly in the surplus/deficit 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.

Depreciation

Depreciable property plant and equipment assets, apart from computer equipment, are written-off to their estimated residual values over their estimated useful lives to ARPANSA, using the straight-line method of depreciation. Computer equipment is depreciated using the reducing balance method, as the resulting depreciation pattern more accurately reflects the reduction in fair value over the life of these assets. Leasehold improvements are depreciated using the straight line method over the lesser of the estimated useful life of the improvements or the unexpired period of the lease.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

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

	2012	2011
Buildings on freehold land	**6 years to 32 years**	6 years to 32 years
Leasehold improvements	**Lease term**	Lease term
Plant and equipment	**3 years to 27 years**	3 years to 27 years

Impairment

All assets were assessed for impairment at 30 June 2012. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount.

The recoverable amount of an asset is the higher of its fair value less costs to sell and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if ARPANSA were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

Derecognition

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal.

1.17 Intangibles

ARPANSA's intangibles comprise internally developed software for internal use and trade marks. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Intangibles are amortised on a straight-line basis over their anticipated useful life. The useful lives of ARPANSA's intangibles are 5 to 14 years (2010-11: 5 to 14 years).

All intangibles assets were assessed for indications of impairment as at 30 June 2012.

1.18 Inventories

Inventories held for sale are valued at the lower of cost and net realisable value.

Inventories held for distribution are valued at cost, adjusted for any loss of service potential.

Costs incurred in bringing each item of inventory to its present location and condition are assigned as follows:

a) raw materials and stores – purchase cost on a first-in-first-out basis; and

b) finished goods and work in progress – cost of direct materials and labour plus attributable costs that can be allocated on a reasonable basis.

Inventories acquired at no cost or nominal consideration are measured at current replacement cost at the date of acquisition.

1.19 Taxation

The Agency is exempt from all forms of taxation except Fringe Benefits Tax (FBT) and the Goods and Services Tax (GST).

Revenues, expenses and assets are recognised net of GST, except:

a) where the amount of GST incurred is not recoverable from the Australian

b) for receivables and payables.

Note 2: Events after the Reporting Period

No events after the reporting period have occurred that would significantly affect the ongoing structure or financial activities of the Agency

Note 3: Expenses

	2012 $	2011 $
Note 3A: Employee benefits		
Wages and salaries	**12,212,147**	11,465,140
Superannuation - defined contribution	**1,964,210**	1,850,465
Superannuation - defined benefit	**374,919**	311,737
Leave and other entitlements	**2,942,803**	2,545,187
Separation and redundancies	**423,850**	209,291
Total employee benefits	**17,917,929**	16,381,820
Note 3B: Suppliers		
Goods and services		
Audit fees	**150,447**	156,803
Committees	**125,751**	143,315
Communications	**719,994**	736,593
Construction and maintenance - CTBT	**386,029**	2,766,876
Contractors/Consultants	**736,798**	880,596
Information technology	**763,248**	498,020
Insurance	**485,793**	420,498
Laboratory	**239,177**	176,361
Postage and freight	**169,173**	193,412
Reference material & subscriptions	**267,836**	239,826
Repair and maintenance	**399,439**	388,661
Training and conferences	**312,830**	254,672
Travel	**1,488,740**	1,572,934
Utilities	**470,004**	451,447
Other goods and services	**1,323,185**	1,481,305
Total goods and services	**8,038,444**	10,361,319
Provision of goods – external parties	**1,764,919**	1,510,718
Rendering of services – related entities	**1,635,034**	1,434,049
Rendering of services – external parties	**4,638,491**	7,416,552
Total goods and services	**8,038,444**	10,361,319
Other supplier expenses		
Operating lease rentals - external entity		
Minimum lease payments	**409,707**	381,300
Workers compensation premiums	**54,815**	56,191
Total other supplier expenses	**464,522**	437,491
Total supplier expenses	**8,502,966**	10,798,810
Note 3C: Depreciation and amortisation		
Depreciation:		
Infrastructure, plant and equipment	**1,332,400**	1,266,406
Buildings	**861,024**	788,768
Total depreciation	**2,193,424**	2,055,174
Amortisation:		
Intangibles:		
Computer software	**349,041**	305,561
Other	**330**	330
Total amortisation	**349,371**	305,891
Total depreciation and amortisation	**2,542,795**	2,361,065
Note 3D: Write-down and impairment of assets		
Impairment on financial assets	**246**	9,306
Property, plant and equipment - write-off	**44,483**	5,238
Computer software - write-off	**-**	1,101
Inventories - write-off	**87,970**	-
Revaluation decrement -Infrastructure, plant and equipment	**39,810**	-
Total write-down and impairment of assets	**172,509**	15,645
Note 3E: Foreign exchange losses		
Non-speculative	**535**	658
Total foreign exchange losses	**535**	658

Note 4: Income

	2012	2011
	$	$
Own-source revenue		
Note 4A: Sale of goods and rendering of services		
Scientific services - PRMS	**2,529,588**	2,503,791
Construction and maintenance contracts - CTBT	**1,449,170**	4,822,779
Other scientific services	**2,736,366**	2,285,550
Total sale of goods and rendering of services	**6,715,124**	9,612,120
Provision of goods - related entities	**5,552**	6,623
Provision of goods - external parties	**353,731**	428,579
Rendering of services - related entities	**1,133,323**	1,029,075
Rendering of services - external parties	**5,222,518**	8,147,843
Total sale of goods and rendering of services	**6,715,124**	9,612,120
Note 4B: Licence fees		
Application fees	**32,198**	66,143
Annual charges	**3,807,222**	3,761,769
Total licence fees	**3,839,420**	3,827,912
Gains		
Note 4C: Other gains		
Resources received free of charge - ANAO audit fees	**54,250**	53,000
Total other gains	**54,250**	53,000
Revenue from Government		
Note 4D: Revenue from Government		
Appropriation:		
Departmental appropriation	**16,130,000**	13,735,130
Total revenue from Government	**16,130,000**	13,735,130

The Agency has received $42,454 (2011: $0) under the Parental Leave Payments Scheme.

Note 5: Financial Assets

	2012	2011
	$	$
Note 5A: Cash and cash equivalents		
Special accounts	**1,627,194**	1,598,552
Cash on hand or on deposit	**28,687**	3,000
Total cash and cash equivalents	**1,655,881**	1,601,552
Note 5B: Trade and other receivables		
Goods and services	**956,995**	2,205,826
Appropriations receivable:		
for existing outputs	**580,000**	2,535,130
GST receivable from the Australian Taxation Office	**78,857**	147,752
Other receivables	**15,717**	3,958
Total trade and other receivables (gross)	**1,631,569**	4,892,666
Less impairment allowance account		
Goods and services	**(21,489)**	(40,800)
Total trade and other receivables (net)	**1,610,080**	4,851,866
Receivables are aged as follows:		
Not overdue	**1,525,012**	3,080,024
Overdue by:		
0 to 30 days	**93,722**	1,723,716
31 to 60 days	**12,647**	53,853
61 to 90 days	**188**	19,766
More than 90 days	**-**	15,307
Total receivables (gross)	**1,631,569**	4,892,666
The impairment allowance account is aged as follows:		
Overdue by:		
0 to 30 days	**8,654**	-
31 to 60 days	**12,647**	5,727
61 to 90 days	**188**	19,766
More than 90 days	**-**	15,307
Total impairment allowance account	**21,489**	40,800
Reconciliation of the impairment allowance account		
Goods and services		
Opening Balance	**40,800**	31,060
Amounts recovered and reversed	**1,413**	9,543
Amounts written off	**(20,970)**	(9,109)
Increase/decrease recognised in net surplus	**246**	9,306
Closing Balance	**21,489**	40,800
Note 5C: Other financial assets		
Accrued revenue	**81,703**	395,323
Total other financial assets	**81,703**	395,323

Total other financial assets are expected to be recovered in no more than 12 months

Note 6: Non-Financial Assets

	2012 $	2011 $
Note 6A: Land and buildings		
Land at fair value	**4,500,000**	4,329,000
Buildings on freehold land:		
– work in progress	**-**	2,703,265
– fair value	**14,570,000**	7,207,498
– accumulated depreciation	**-**	(1,507,935)
Total buildings on freehold land	**14,570,000**	8,402,828
Leasehold improvements		
– fair value	**159,600**	331,471
– accumulated depreciation	**-**	(331,471)
Total leasehold improvements	**159,600**	-
Total land and buildings	**19,229,600**	12,731,828

Land and buildings at fair value were subject to a revaluation at 30 June 2012.
No indicators of impairment were found for land and buildings.
No land and buildings are expected to be sold or disposed of within the next 12 months.

Note 6: Non-Financial Assets (continued)

	2012 $	2011 $
Note 6B: Property, plant and equipment		
Property, plant and equipment:		
– work in progress	**47,182**	-
– fair value	**6,655,128**	11,339,267
– accumulated depreciation	**-**	(4,334,971)
Total property, plant and equipment	**6,702,310**	7,004,296

Property, plant and equipment at fair value was subject to a revaluation at 30 June 2012.
No indicators of impairment were found for infrastructure, plant and equipment
No property, plant and equipment are expected to be sold or disposed of within the next 12 months.

Revaluations of non-financial assets

All revaluations are conducted in accordance with the revaluation policy stated at Note 1. On 30 June 2012 independent valuers from the Australian Valuation office conducted the revaluations.

Revaluation increments of $171,000 for land (2011: $429,000), $3,416,567 for buildings on freehold land (2011: $nil), and $159,600 for leasehold improvements (2011: $nil) and a decrement of $315,881 for property plant and equipment (2011: $nil) were made to the asset revaluation reserve by asset class and included in the equity section of the balance sheet; A decrement of $39,810 for property plant and equipment was expensed (2011: $nil).

Note 6C: Intangibles		
Computer software:		
Externally acquired	**1,359,725**	1,224,839
Accumulated amortisation	**(1,060,741)**	(914,584)
Internally developed – in progress	**66,007**	44,477
Internally developed – in use	**1,121,463**	969,413
Accumulated amortisation	**(689,278)**	(486,393)
Total computer software	**797,176**	837,752
Trademarks:		
Trademarks	**4,620**	4,620
Accumulated amortisation	**(3,791)**	(3,461)
Total trademarks	**829**	1,159
Total intangibles	**798,005**	838,911

No indicators of impairment were found for intangible assets.
No intangibles are expected to be sold or disposed of within the next 12 months.

Note 6: Non-Financial Assets (continued)

	2011	2010
	$	$
Note 6D: Inventories		
Inventories held for sale		
Finished goods	**56,993**	129,943
Inventories held for distribution	**1,432,594**	1,588,393
Total inventories	**1,489,587**	1,718,336

During 2011-12, $169,417 of inventory held for sale was recognised as an expense (2010-11: $68,602).

During 2011-12, $52,325, of inventory held for distribution was recognised as an expense (2010-11: $73,044).

Following valuation of inventories, no indicators of impairment were found.
All inventory is expected to be sold or distributed in the next 12 months.

Note 6E: Other non-financial assets		
Prepayments	**459,488**	497,198
Total other non-financial assets	**459,488**	497,198

Total other non-financial assets are expected to be recovered within 12 months
No indicators of impairment were found for other non-financial assets

Note 6: Non-Financial Assets (continued)

Note 6F: Analysis of property, plant and equipment

TABLE A – Reconciliation of the opening and closing balances of property, plant and equipment (2011-12)

	Land $	Buildings $	Leasehold Improvements $	PP & E $	Total $
As at 1 July 2011					
Gross book value	**4,329,000**	**9,910,763**	**331,471**	**11,339,268**	**25,910,502**
Accumulated depreciation and impairment	**-**	**(1,507,935)**	**(331,471)**	**(4,334,972)**	**(6,174,378)**
Net book value 1 July 2011	**4,329,000**	**8,402,828**	**-**	**7,004,296**	**19,736,124**
Additions:					
By purchase	**-**	**3,615,000**		**1,427,217**	**5,042,217**
Revaluations and impairments recognised in other comprehensive income	**171,000**	**3,416,567**	**159,600**	**(355,691)**	**3,391,476**
Depreciation expense	**-**	**(861,024)**		**(1,332,400)**	**(2,193,424)**
Disposals:					
Other disposals	**-**	**(3,371)**	**-**	**(41,112)**	**(44,483)**
Net book value 30 June 2012	**4,500,000**	**14,570,000**	**159,600**	**6,702,310**	**25,931,910**
Net book value as of 30 June 2012 represented by:					
Gross book value	**4,500,000**	**14,570,000**	**159,600**	**6,702,310**	**25,931,910**
Accumulated depreciation and impairment	**-**	**-**	**-**	**-**	**-**
	4,500,000	**14,570,000**	**159,600**	**6,702,310**	**25,931,910**

TABLE B – Reconciliation of the opening and closing balances of property, plant and equipment (2010-11)

	Land $	Buildings $	Leasehold Improvements $	PP & E $	Total $
As at 1 July 2010					
Gross book value	3,900,000	5,672,844	331,471	10,361,554	20,265,869
Accumulated depreciation and impairment		(719,167)	(331,471)	(3,095,752)	(4,146,390)
Net book value 1 July 2010	3,900,000	4,953,677	-	7,265,802	16,119,479
Additions:					
By purchase	-	4,237,919	-	1,010,138	5,248,057
Revaluations and impairments recognised in other comprehensive income	429,000	-	-	-	429,000
Depreciation expense	-	(788,768)	-	(1,266,406)	(2,055,174)
Disposals:					
Other disposals	-	-	-	(5,238)	(5,238)
Net book value 30 June 2011	4,329,000	8,402,828	-	7,004,296	19,736,124
Net book value as of 30 June 2011 represented by:					
Gross book value	4,329,000	9,910,763	331,471	11,339,268	25,910,502
Accumulated depreciation and impairment	-	(1,507,935)	(331,471)	(4,334,972)	(6,174,378)
	4,329,000	8,402,828	-	7,004,296	19,736,124

Note 6: Non-Financial Assets (continued)

Note 6G: Intangibles

TABLE A: Reconciliation of the opening and closing balances of intangibles (2011-12)

	Computer software internally developed $	Computer software purchased $	Other intangibles - Trademarks $	Total $
As at 1 July 2011				
Gross book value	**1,013,891**	**1,224,837**	**4,620**	**2,243,348**
Accumulated amortisation and impairment	**(486,393)**	**(914,584)**	**(3,461)**	**(1,404,438)**
Net book value 1 July 2011	**527,498**	**310,253**	**1,159**	**838,910**
Additions:				
By purchase	**107,573**	**200,892**	**-**	**308,465**
Amortisation	**(202,885)**	**(146,156)**	**(330)**	**(349,371)**
Disposals:				
Other disposals	**-**	**-**	**-**	**-**
Net book value 30 June 2012	**432,186**	**364,989**	**829**	**798,004**
Net book value as of 30 June 2012 represented by:				
Gross book value	**1,121,464**	**1,425,729**	**4,620**	**2,551,813**
Accumulated amortisation and impairment	**(689,278)**	**(1,060,740)**	**(3,791)**	**(1,753,809)**
	432,186	**364,989**	**829**	**798,004**

TABLE B: Reconciliation of the opening and closing balances of intangibles (2010-11)

	Computer software internally developed $	Computer software purchased $	Other intangibles - Trademarks $	Total $
As at 1 July 2010				
Gross book value	1,021,095	1,089,952	4,620	2,115,667
Accumulated amortisation and impairment	(363,824)	(762,717)	(3,131)	(1,129,672)
Net book value 1 July 2010	657,271	327,235	1,489	985,995
Gross book value adjustment	(7,204)	7,204	-	-
Additions:				
By purchase	-	159,907	-	159,907
Amortisation	(122,569)	(182,992)	(330)	(305,891)
Disposals:				
Other disposals	-	(1,101)	-	(1,101)
Net book value 30 June 2011	527,498	310,253	1,159	838,910
Net book value as of 30 June 2011 represented by:				
Gross book value	1,013,891	1,224,837	4,620	2,243,348
Accumulated amortisation and impairment	(486,393)	(914,584)	(3,461)	(1,404,438)
	527,498	310,253	1,159	838,910

Note 7: Payables

	2012	2011
	$	$
Note 7A: Suppliers		
Trade creditors and accruals	**1,370,994**	1,834,516
Operating lease rentals	**7,083**	5,000
Total supplier payables	**1,378,077**	1,839,516
Supplier payables expected to be settled within 12 months:		
External parties	**1,378,077**	1,839,516
Total supplier payables	**1,378,077**	1,839,516
Settlement is usually made within 30 days.		
Note 7B: Other payables		
Salaries and wages	**353,656**	478,107
Superannuation	**61,014**	51,186
Separation and redundancies	**281,290**	209,291
Unearned income	**1,098,404**	1,620,294
GST payable to the Australian Taxation Office	**-**	-
Other	**27,030**	490,000
Total other payables	**1,821,394**	2,848,878
Other payables are expected to be settled in:		
No more than 12 months	**1,821,394**	2,639,587
More than 12 months	**-**	209,291
	1,821,394	2,848,878

Note 8: Provisions

Employee provisions		
Leave	**5,228,201**	4,738,280
Total employee provisions	**5,228,201**	4,738,280
Employee provisions are expected to be settled in:		
No more than 12 months	**1,021,371**	938,560
More than 12 months	**4,206,830**	3,799,720
Total employee provisions	**5,228,201**	4,738,280

Note 9: Cash Flow Reconciliation

	2012 $	2011 $
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash Flow Statement	**1,655,881**	1,601,552
Balance Sheet	**1,655,881**	1,601,552
Difference	**-**	-
Reconciliation of net cost of services to net cash from operating activities:		
Net cost of services	**(2,397,940)**	(2,329,836)
Adjustments for non-cash items		
Depreciation /amortisation	**2,542,795**	2,361,065
Revaluation decrement	**39,810**	-
Net write down of non-financial assets	**132,453**	6,339
Changes in assets / liabilities		
(Increase) / decrease in net receivables	**3,241,785**	410,069
(Increase) / decrease in inventories	**140,779**	(13,694)
(Increase) / decrease in prepayments	**27,122**	(204,000)
(Increase) / decrease in accrued revenue	**313,620**	(18,678)
Increase / (decrease) in employee provisions	**489,921**	43,798
Increase / (decrease) in supplier payables	**(461,438)**	1,238,758
Increase / (decrease) in other payables	**(1,027,485)**	541,380
Net cash from operating activities	**3,041,422**	2,035,201

Note 10: Contingent Liabilities and Assets

As at 30 June 2012, and 30 June 2011 ARPANSA had no quantifiable, unquantifiable or significant remote contingencies.

Note 11: Executive Remuneration

Note 11A: Senior Executive Remuneration Expense for the reporting period

	2012	2011
	$	$
Short-term employee benefits:		
Salary	**785,790**	867,187
Annual leave accrued	**28,040**	20,053
Performance bonuses	**-**	31,000
Motor vehicle and other allowances	**101,512**	123,806
Total Short-term employee benefits	**915,342**	1,042,046
Post-employment benefits		
Superannuation	**146,132**	138,910
Total post-employment benefits	**146,132**	138,910
Other long-term benefits		
Long-service leave	**56,162**	64,092
Total other long-term benefits	**56,162**	64,092
Termination benefits	**-**	890,944
Total	**1,117,636**	2,135,992

Notes:

1. Note 11A was prepared on an accrual basis (so the performance bonus expenses disclosed above may differ from the cash "Bonus paid" in Note 11B).

2. Note 11A excludes acting arrangements and part-year service where remuneration expensed for a senior executive was less than $150,000

Note 11: Executive Remuneration (continued)

Note 11B: Average Annual Reportable Remuneration Paid to Substantive Senior Executives During the Reporting Period

Average annual reportable remuneration[1]	Senior Executives No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
2012						
Total remuneration (including part-time arrangements):						
$180,000 to $209,999	**1**	**169,964**	**24,176**	**158**	**-**	**194,298**
$210,000 to $239,999	**1**	**154,419**	**75,338**	**256**	**-**	**230,013**
$240,000 to $269,999	**1**	**226,180**	**33,946**	**-**	**-**	**260,126**
$300,000 to $329,999	**1**	**272,539**	**32,254**	**-**	**-**	**304,793**
Total	**4**					
2011						
Total remuneration (including part-time arrangements):						
$210,000 to $239,999	1	147,006	74,921	256	8,000	230,183
$240,000 to $269,999	2	219,646	31,952	77	4,000	255,675
$270,000 to $299,999	1	244,598	22,876	205	15,000	282,679
Total	4					

Notes:

1. This table reports substantive senior executives who received remuneration during the reporting period. Each row is an averaged figure based on headcount for individuals in the band.

2. 'Reportable salary' includes the following:
   a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
   b) reportable fringe benefits (at the net amount prior to 'grossing up' to account for tax benefits); and
   c) exempt foreign employment income.

3. The 'contributed superannuation' amount is the average actual superannuation contributions paid to senior executives in that reportable remuneration band during the reporting period, including any salary sacrificed amounts, as per the individuals' payment summary].

4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.

5. 'Bonus paid' represents average actual bonuses paid during the reporting period in that reportable remuneration band. 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.

6. Various salary sacrifice arrangements were available to senior executives including superannuation, motor vehicle and expense payment fringe benefits. Salary sacrifice benefits are reported in the 'reportable salary' column, excluding salary sacrificed superannuation, which is reported in the 'contributed superannuation' column.

Note 11: Executive Remuneration (continued)

Note 11C: Other Highly Paid Staff

Average annual reportable remuneration[1]	Staff No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
2012						
Total remuneration (including part-time arrangements):						
$150,000 to $179,999	**8**	**109,862**	**47,692**	**117**	**2,750**	**160,421**
$180,000 to $209,999	**1**	**168,154**	**22,656**	**388**	**1,000**	**192,198**
$210,000 to $239,999	**1**	**188,269**	**27,098**	**582**	**1,000**	**216,949**
Total	**10**					
2011						
Total remuneration (including part-time arrangements):						
$150,000 to $179,999	5	121,668	34,979	246	1,220	158,113
$180,000 to $209,999	3	138,068	55,378	154	2,350	195,950
Total	8					

Notes:

1. This table reports substantive senior executives who received remuneration during the reporting period. Each row is an averaged figure based on headcount for individuals in the band.

2. 'Reportable salary' includes the following:
   a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
   b) reportable fringe benefits (at the net amount prior to 'grossing up' to account for tax benefits); and
   c) exempt foreign employment income.

3. The 'contributed superannuation' amount is the average actual superannuation contributions paid to senior executives in that reportable remuneration band during the reporting period, including any salary sacrificed amounts, as per the individuals' payment summary].

4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.

5. 'Bonus paid' represents average actual bonuses paid during the reporting period in that reportable remuneration band. 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.

6. Various salary sacrifice arrangements were available to senior executives including superannuation, motor vehicle and expense payment fringe benefits. Salary sacrifice benefits are reported in the 'reportable salary' column, excluding salary sacrificed superannuation, which is reported in the 'contributed superannuation' column.

Note 12: Remuneration of Auditors

	2012 $	2011 $
Financial statement audit services were provided free of charge to the Agency.		
The fair value of the audit services provided was:	**54,250**	53,000
	54,250	53,000

No other services were provided by the auditors of the financial statements.

Note 13: Compensation and Debt Relief

No payment was provided in special circumstances relating to APS employment pursuant to section 73 of the *Public Service Act 1999* (PS Act) during the reporting period. (2011: One payment made).	-	100,000

Note 14: Financial Instruments

	2012	2011
	$	$
Note 14A: Categories of financial instruments		
Financial assets		
Loans and receivables		
Cash and cash equivalents	**1,655,881**	1,601,552
Trade receivables	**956,995**	2,205,826
Carrying amount of financial assets	**2,612,876**	3,807,378
Financial liabilities		
Other liabilities		
Trade creditors	**1,035,892**	781,577
Carrying amount of financial liabilities	**1,035,892**	781,577

Note 14: Financial Instruments (continued)

Note 14B: Credit risk

ARPANSA is exposed to minimal credit risk as loans and receivables are cash and trade receivables. The maximum exposure to credit risk is the risk that arises from potential default of a debtor. This amount is equal to the total amount of trade receivables (2012: $956,999 and 2011:$2,205,826). ARPANSA has assessed the risk of the default on payment and has allocated $21,489 in 2012 (2011: $40,800) to an impairment allowance account.

ARPANSA has policies and procedures that guide employees' debt recovery techniques that are to be applied when debts are past due.

ARPANSA holds no collateral to mitigate against credit risk

The table below shows the credit quality of financial instruments not past due or individually determined as impaired.

	Not Past Due Nor Impaired 2012 $	Not Past Due Nor Impaired 2011 $	**Past due or impaired 2012 $**	Past due or impaired 2011 $
Cash and cash equivalent	**1,655,881**	1,601,552	**-**	-
Trade receivables (gross)	**850,438**	393,184	**106,557**	1,812,642
Total	**2,506,319**	1,994,736	**106,557**	1,812,642

Ageing of financial assets that are past due but not impaired for 2012

	0 to 30 days $	**31 to 60 days $**	**61 to 90 days $**	**90+ days $**	**Total $**
Loans and receivables					
Trade receivables (gross)	**93,722**	**12,647**	**188**	**-**	**106,557**
Total	**93,722**	**12,647**	**188**	**-**	**106,557**

Ageing of financial assets that are past due but not impaired for 2011

	0 to 30 days $	**31 to 60 days $**	**61 to 90 days $**	**90+ days $**	**Total $**
Loans and receivables					
Trade receivables (gross)	1,723,716	53,853	19,766	15,307	1,812,642
Total	1,723,716	53,853	19,766	15,307	1,812,642

Note 14: Financial Instruments (continued)

Note 14C: Liquidity risk

ARPANSA's financial liabilities are trade creditors. The majority of ARPANSA's funding is appropriated from the Australian Government. The Agency manages its budgeted funds to ensure it has adequate funds to meet payments as they fall due. In addition, ARPANSA has policies in place to ensure timely payments are made when due and has no past experience of default. ARPANSA does not expect to have difficulty meeting its financial liabilities as and when they become due and payable.

The following tables illustrates the maturities for non-derivative financial liabilities.

	within 1 year 2012 $'000	**1 to 5 years 2012 $'000**	**> 5 years 2012 $'000**	**Total 2012 $'000**
Trade creditors	**1,035,892**	**-**	**-**	**1,035,892**
Total	**1,035,892**	**-**	**-**	**1,035,892**

	within 1 year 2011 $'000	1 to 5 years 2011 $'000	> 5 years 2011 $'000	Total 2011 $'000
Trade creditors	781,577	-	-	781,577
Total	781,577	-	-	781,577

ARPANSA has no derivative financial liabilities in both the current and prior year

Note 14D: Market Risk

Currency Risk

ARPANSA's exposure to "Currency Risk" is minimal as only a small number of contracts are in currencies other than Australian Dollars.

Interest Rate Risk

ARPANSA's financial instruments are not exposed to interest rate risk.

Other Price Risk

ARPANSA's financial instruments are not exposed to other price risk.

Note 15: Appropriations

In accordance with section 56 of the *Australian Radiation Protection and Nuclear Safety Act 1998,* all monies received by ARPANSA are to be paid into the ARPANSA Special Account. Pursuant to this section, all monies paid into this Account are automatically appropriated for the use of ARPANSA.

Table A: Annual Appropriations ('Recoverable GST exclusive')

	2012 Appropriations			Appropriation applied in 2012 (current and prior years)	Variance
	Appropriation Act				
	Annual Appropriation	Appropriations reduced[1]	Total appropriation		
	$	$	$	$	$
DEPARTMENTAL					
Ordinary annual services	**18,483,000**	**-**	**18,483,000**	**(21,018,130)**	**(2,535,130)**
Other services					
Equity	-	-	-	-	-
Total departmental	**18,483,000**	**-**	**18,483,000**	**(21,018,130)**	**(2,535,130)**

Notes:

1. Appropriations reduced under Appropriation Acts (Nos. 1,3 and 5) 2011-12: sections 10,11, 12 and 15 and under Appropriation Acts (Nos. 2,4 and 6) 2011-12: sections 12,13, 14 and 17. Departmental appropriations do not lapse at financial year-end. However, the responsible Minister may decide that part or all of a departmental appropriation is not required and request the Finance Minister to reduce that appropriation. The reduction in the appropriation is effected by the Finance Minister's determination and is disallowable by Parliament.

	2011 Appropriations			Appropriation applied in 2011 (current and prior years)	Variance
	Appropriation Act				
	Annual Appropriation	Appropriations reduced[1]	Total appropriation		
	$	$	$	$	$
DEPARTMENTAL					
Ordinary annual services	**15,941,000**	**(62,870)**	**15,878,130**	**(18,660,130)**	**(2,782,000)**
Other services					
Equity	-	-	-	-	-
Total departmental	**15,941,000**	**(62,870)**	**15,878,130**	**(18,660,130)**	**(2,782,000)**

Notes:

1. Appropriations reduced under Appropriation Acts (Nos. 1,3 and 5) 2010-11: sections 10,11, 12 and 15 and under Appropriation Acts (Nos. 2,4 and 6) 2010-11: sections 12,13, 14 and 17. Departmental appropriations do not lapse at financial year-end. However, the responsible Minister may decide that part or all of a departmental appropriation is not required and request the Finance Minister to reduce that appropriation. The reduction in the appropriation is effected by the Finance Minister's determination and is disallowable by Parliament. On 30 June 2011, the Finance Minister determined a reduction in departmental appropriations following a request by the Minister for Health and Ageing. The amount of the reduction determined under Appropriation Act No.1 2010-2011 was: $62,870.

Note 15: Appropriations (continued)

Table B: Departmental Capital Budgets ('Recoverable GST exclusive')

	2012 Capital Budget Appropriations				
	Appropriation Act				
	Annual Capital Budget $	Appropriations reduced[2] $	Total Capital Budget Appropriations $	Payments for non-financial assets[3] $'000	Payments for other purposes $'000
DEPARTMENTAL					
Ordinary annual services - Departmental Capital Budget[1]	**2,353,000**	**-**	**2,353,000**	**2,353,000**	**-**

Notes:

1. Departmental Capital Budgets are appropriated through Appropriation Acts (No.1,3,5). They form part of ordinary annual services, and are not separately identified in the Appropriation Acts. For more information on ordinary annual services appropriations, please see Table A: Annual appropriations.
2. Appropriations reduced under Appropriation Acts (No.1,3,5) 2011-12: sections 10, 11, 12 and 15 or via a determination by the Finance Minister.
3. Payments made on non-financial assets include purchases of assets, expenditure on assets which has been capitalised, costs incurred to make good an asset to its original condition, and the capital repayment component of finance leases.

	2011 Capital Budget Appropriations				
	Appropriation Act				
	Annual Capital Budget $'000	Appropriations reduced[2] $'000	Total Capital Budget Appropriations $'000	Payments for non-financial assets[3] $'000	Payments for other purposes $'000
DEPARTMENTAL					
Ordinary annual services - Departmental Capital Budget[1]	2,143,000	-	2,143,000	2,143,000	-

Notes:

1. Departmental Capital Budgets are appropriated through Appropriation Acts (No.1,3,5). They form part of ordinary annual services, and are not separately identified in the Appropriation Acts. For more information on ordinary annual services appropriations, please see Table A: Annual appropriations.
2. Appropriations reduced under Appropriation Acts (No.1,3,5) 2010-11: sections 10, 11, 12 and 15 or via a determination by the Finance Minister.
3. Payments made on non-financial assets include purchases of assets, expenditure on assets which has been capitalised, costs incurred to make good an asset to its original condition, and the capital repayment component of finance leases.

Note 15: Appropriations (continued)

Table C: Unspent Departmental Annual Appropriations ('Recoverable GST exclusive')

	2012	2011
Authority	**$**	$
Appropriation Act (No. 1) 2010-11	**-**	2,535,130
Appropriation Act (No. 1) 2011-12	**580,000**	**-**
Total	**580,000**	2,535,130

Note 16: Special Accounts

ARPANSA Special Account (Departmental)	**2012**	2011
	$	$
Legal Authority: *ARPANS Act 1998; s56(4)*		
Appropriation: *Financial Management and Accountability Act 1997* ; s21		
Purpose : The purpose of the Special Account is set out in the ARPANS Act at section 56(4): "The purposes of the Special Account are to make payments: (a) to further the object of this Act (as set out in section 3); and (b) otherwise in connection with the performance of the CEO's functions under this Act or the Regulations."		
Balance brought forward from previous period	**1,601,552**	2,841,904
Appropriations for reporting period	**20,438,130**	16,125,000
GST credits (FMA Act s30A)	**763,107**	233,595
Other receipts	**12,148,793**	14,259,184
Total increase	**33,350,030**	30,617,779
Available for payments	**34,951,582**	33,459,683
Payments made to employees	**(17,443,603)**	(15,849,540)
Payments made to suppliers	**(15,852,098)**	(16,008,591)
Total decrease	**(33,295,701)**	(31,858,131)
Total Balance carried to next period	**1,655,881**	1,601,552

Note 17: Compliance with Statutory Conditions for Payments from the Consolidated Revenue Fund

Section 83 of the Constitution provides that no amount may be paid out of the Consolidated Revenue Fund except under an appropriation made by law. The Department of Finance and Deregulation provided information to all agencies in 2011 regarding the need for risk assessments in relation to compliance with statutory conditions on payments from special appropriations, including special accounts.

During 2011-12, the agency completed a review of possible exposure to risk of not compliance with statutory conditions on payments from appropriations. This involved:

• a review of the Australian Radiation Protection and Nuclear Safety Act 1998 and Australian Radiation Protection and Nuclear Safety Regulations 1999; and

• determining the risk of non-compliance by assessing the difficulty of administering the statutory conditions and assessing the extent to which existing payment systems and processes satisfy those conditions

The agency has only one special account involving statutory conditions for payment.

As at 30 June 2012 this work had been completed in respect of all amounts with statutory conditions for payment (representing $26.4m of total expenditure in 2011-12).

The work has identified no issues of compliance with Section 83

Note 18: Reporting of Outcomes

All ARPANSA's transactions fall within Outcome 1, "The Australian people and the environment are protected from the harmful effects of radiation"

Note 18A: Net cost of outcome delivery

	Outcome	
	2012	2011
	$	$
Departmental		
Expenses	**29,136,734**	29,557,998
Own-source income	**10,554,544**	13,440,032
Net cost of outcome delivery	**18,582,190**	16,117,966

Net cost shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

Note 18B: Major classes of departmental expense, income, assets and liabilities by outcome

	Outcome	
	2012	2011
	$	$
Expenses		
Employees	**17,917,929**	16,381,820
Suppliers	**8,502,966**	10,798,810
Depreciation and amortisation	**2,542,795**	2,361,065
Write-down and impairment of assets	**172,509**	15,645
Other expenses	**535**	658
Total	**29,136,734**	29,557,998
Income		
Revenue from government	**16,130,000**	13,735,130
Sales of goods and services	**6,715,124**	9,612,120
Licence Fees	**3,839,420**	3,827,912
Other	**54,250**	53,000
Total	**26,738,794**	27,228,162
Assets		
Cash and cash equivalents	**1,655,881**	1,601,552
Trade and other receivables	**1,610,080**	4,851,866
Other financial assets	**81,703**	395,323
Land and buildings	**19,229,600**	12,731,828
Property, plant and equipment	**6,702,310**	7,004,296
Intangibles	**798,005**	838,911
Inventories	**1,489,587**	1,718,336
Other non-financial assets	**459,488**	497,198
Total	**32,026,654**	29,639,310
Liabilities		
Suppliers	**1,378,077**	1,839,516
Other payables	**1,821,394**	2,848,878
Employee provisions	**5,228,201**	4,738,280
Total	**8,427,672**	9,426,674

Net cost shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

Note 19: Net Cash Appropriation Arrangements

	2012 **$**	2011 $
Total comprehensive income (loss) less depreciation/amortisation expenses previously funded through revenue appropriations *	**3,576,141**	460,229
Plus: depreciation/amortisation expenses previously funded through revenue appropriations		
Depreciation and amortisation expenses	**(2,542,795)**	(2,361,065)
Total Comprehensive Income as per the Statement of Comprehensive income	1,033,346	(1,900,836)

* From 2010-11, the Government introduced net cash appropriation arrangements, where revenue appropriations for depreciation/amortisation expenses ceased. Entities now receive a separate capital budget provided through equity appropriations. Capital budgets are to be appropriated in the period when cash payment for capital expenditure is required.

Appendix 10: Index of compliance with reporting requirements

List of Tables and Figures

Tables

Figures

Abbreviations

ADF	Australian Defence Force
ANRDR	Australian National Radiation Dose Register
ANSTO	Australian Nuclear Science and Technology Organisation
APDS	ARPANSA Performance and Development System
APS	Australian Public Service
ARGOS	Accident Reporting and Guidance Operating System
ARIR	Australian Radiation Incident Register
ARL	Australian Radiation Laboratory
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASNO	Australian Safeguards and Non-Proliferation Office
CAG	Clinical Advisory Group
CEO	Chief Executive Officer
CLC	common law contract
COAG	Council of Australian Governments
CPGs	Commonwealth Procurement Guidelines
CSA	Compliance Self Assessment
CSS	International Atomic Energy Agency's Commission on Safety Standards
CT	computed tomography
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
Customs	Australian Customs and Border Protection Service
DoHA	Department of Health and Ageing
DRLs	diagnostic reference levels
ELF	extremely low frequency
EME	electromagnetic energy
EMF	electric and magnetic fields
EMR	electromagnetic radiation
ERICA	Environmental Risk from Ionising Contaminants: Assessment and Management
FLIR	Forward Looking Infrared
FMA Act	Financial Management and Accountability Act 1997
FOI Act	Freedom of Information Act 1982
GICNT	Global Initiative to Combat Nuclear Terrorism
HIFAR	High-Flux Australian Research Reactor
Hz	hertz
IAEA	International Atomic Energy Agency
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICRP	International Commission on Radiological Protection
ICT	information and communication technology
ILW	intermediate-level waste
IM	information management
IMP	Incident Management Plan
IMS	International Monitoring System
IPLs	Intense Pulsed Light Devices
IPS	Information Publication Scheme
IRRS	International Regulatory Review Service (IAEA)

KPIs	key performance indicators
linac	medical linear accelerator
LLW	low-level waste
MARTAC	Maralinga Rehabilitation Technical Advisory Committee
MDCT	multidetector computed tomography
MoU	Memorandum of Understanding
NATA	National Association of Testing Authorities
NDRLD	National Diagnostic Reference Level Database
NDRP	National Directory for Radiation Protection
NDWG	Nuclear Detection Working Group
NORM	naturally occurring radioactive material
NPL	National Physical Laboratories
NPW	Nuclear Powered Warship
NSB	Nuclear Safety Bureau
NSC	Nuclear Safety Committee
OHS	Occupational Health and Safety
OPAL	Open Pool Australian Light-water [research reactor]
P&C	People and Culture
PP&S	Physical Protection and Security
PRL	Practice Reference Level
PRMS	Personal Radiation Monitoring Service
PSR	Periodic Safety Review
QMC	Quality Management Committee
QMC	Quality Management Committee
RF	radiofrequency
RHC	Radiation Health Committee
RHS	Radiation Health Series
RIS	Regulatory Impact Statement
RPS	Radiation Protection Series
RWMC	Radioactive Waste Management Committee
SCF	Staff Consultative Forum
SES	Senior Executive Service
SMC	Strategic Management Committee
TGA	Therapeutic Goods Administration
the ARPANS Act	Australian Radiation Protection and Nuclear Safety Act 1998
the Council	Radiation Health and Safety Advisory Council
TRANSSC	Transport Safety Standards Committee (TRANSSC)
TWG	Technical Working Group
UAE	United Arab Emirates
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPF	Ultraviolet Protection Factor
UTS	Ultraviolet Testing Service
UVR	ultraviolet radiation
VSPN	Visiting Ships Panel (Nuclear)
WASSC	Waste Safety Standards Committee (IAEA)
WHO	World Health Organization
WHSC	Work Health and Safety Committee

Glossary

absorbed dose

The energy absorbed per unit mass by matter from ionising radiation which impinges upon it.

accident

An unintended event which causes, or has the potential to cause, employees or members of the public to be exposed to radiation from which the individual doses or collective doses received do not lie within the range of variation which is acceptable for normal operation. An accident may result from human error, equipment failure or other mishap; it may require emergency action to save life or to safeguard health, property or the environment; it requires investigation of its causes and consequences and, possibly, corrective action within the program for control of radiation; and it may require remedial action to mitigate its consequences.

activity

The measure of quantity of radioactive decay.

air kerma

The measure of the energy released in a volume of air at some distance from a radioactive source.

AS/ISO

Standard established by Standards Australia and the International Organization for Standardization.

Australian National Radiation Dose Register

A centralised repository for the radiation dose records of workers as supplied by the employers, maintained by ARPANSA. It is currently limited to those engaged in the uranium mining and milling industry in Australia.

Code of Practice for radiation protection

A document prescribing specific requirements for radiation protection in a particular application.

computed tomography

Pictures of structures within the body created by a computer that takes the data from multiple X-ray images and turns them into pictures.

constraint

Either dose constraint in the case of exposures anticipated to be received, or risk constraint in the case of potential exposures (see dose constraint and risk constraint).

controlled apparatus – as defined in the ARPANS Act

(a) An apparatus that produces ionising radiation when energised or that would, if assembled or repaired, be capable of producing ionising radiation when energised

(b) An apparatus that produces ionising radiation because it contains radioactive material, or

(c) An apparatus prescribed by the Regulations that produces harmful non-ionising radiation when energised.

controlled material – as defined in the ARPANS Act

Any natural or artificial material, whether in solid or liquid form, or in the form of a gas or vapour, which emits ionising radiation spontaneously.

Design Basis Threat (DBT)

a description of the attributes and characteristics of potential insider and/or external adversaries who might attempt unauthorised removal of nuclear material or sabotage against which a physical protection system is designed and evaluated.

diagnostic reference levels (DRLs)

Dose levels for medical exposures in medical radio-diagnostic practices, or levels of activity in the case of radiopharmaceuticals, applied to groups of standard-sized patients or standard phantoms for common types of diagnostic examination and broadly defined types of equipment. These levels are expected not to be consistently exceeded for standard procedures when good and normal practice regarding diagnostic and technical performance is applied. DRLs will be set by relevant professional bodies and published by ARPANSA or the relevant regulatory authority from time to time.

dose

A generic term which may mean absorbed dose, equivalent dose or effective dose depending on context.

dose constraint

A prospective restriction on anticipated dose, primarily intended to be used to discard undesirable options in an optimisation calculation. In occupational exposure, a dose constraint may be used to restrict the options considered in the design of the working environment for a particular category of employee. In medical exposure, a dose constraint for volunteers in medical research may be used to restrict the options considered in the design of an experimental protocol. In public exposure, a dose constraint may be used to restrict the exposure of the critical group from a particular source of radiation.

dosemeters

An instrument used to determine the presence and sometimes the amount of radiation.

dosimetry

The theory and application of the principles and techniques involved in the measurement, calculation and recording of radiation doses.

effective dose

A measure of dose which takes into account both the type of radiation involved and the radiological sensitivities of the organs and tissues irradiated.

electromagnetic energy

The energy stored in an electromagnetic field. Expressed in joule (J).

equivalent dose

A measure of dose which takes into account the type of radiation involved.

exemption

The deliberate omission of a practice from regulatory control, or from some aspects of regulatory control, by the appropriate authority.

exposure

The circumstance of being exposed to radiation.

extremely low frequency radiation

Has very long wavelengths (in the order of a thousand kilometres or more) and frequencies in the range of 100 hertz or less.

gamma ray

Ionising electromagnetic radiation emitted by a radionuclide during radioactive decay or during a nuclear (isomeric) transition.

incident

An event which causes, or has the potential to cause, abnormal exposure of employees or of members of the public and which requires investigation of its causes and consequences and may require corrective action within the program for control of radiation, but which is not of such scale as to be classified as an accident.

Integrated Regulatory Review Service

A peer review and appraisal service offered by the IAEA to strengthen and enhance the effectiveness of a national regulatory system in nuclear, radiation, radioactive waste, transport safety and nuclear security.

Intense Pulsed Light Devices (IPLs)

Instruments that use a full spectrum (noncoherent), non-laser, broadband, filtered Xenon flash lamps. Flash lamps emit in the UVR, visible and IR region of the electromagnetic spectrum. The UVR and IR wavelength components of the emissions are blocked using specific cut-off filters. These properties allow for variability in selecting individual treatment parameters and adapting to different skin types. IPLs are generally used for hair removal. There are other applications such as removal of skin pigmentation, wrinkles and the treatment of certain skin disorders by dermatologists.

ionisation

The process by which one or more electrons are removed from, or sometimes added to, an atom leaving the atom in a charged state.

ionising radiation

Radiation which is capable of causing ionisation

ISO Series

Internationally accepted standards developed by the International Organization for Standardization which is a network of the national standards institutes of 157 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system.

justification

The notion that human activities which lead to exposure to radiation should be justified, before they are permitted to take place, by showing that they are likely to do more good than harm.

licence

A written authorisation issued to an operator which allows the operator to carry out an operation legally.

limitation

The requirement that radiation doses and risks should not exceed a value regarded as unacceptable.

linear accelerator

Radiation therapy relies on the use of ionising radiation to kill cancerous cells. The most common forms of ionising radiation used in radiotherapy are high energy photons and electrons. A Linear Accelerator, or Linac, is the standard method of producing photons and electrons for radiation therapy treatments. Linacs account for the majority of radiotherapy treatment machines in Australia. Linacs are computer driven machines that deliver precise, known doses of radiation to treat cancer patients.

medical cyclotrons

A medical cyclotron is an electrical device for accelerating charged particles in a spiral fashion to high energies. The beams produced are used to manufacture Positron Emission Tomography (PET) radioisotopes which are subsequently injected into patients for medical imaging. The main clinical areas of diagnosis are oncology, cardiology and neurology.

medical exposure

Exposure of a person to radiation received as a patient undergoing medical diagnosis or therapy, or as a volunteer in medical research, or non-occupational exposure received as a consequence of assisting an exposed patient.

non-ionising radiation

Ranges from extremely low frequency radiation through the radiofrequency, microwave, and visible portions of the spectrum into the ultraviolet range.

occupational exposure

Exposure of a person to radiation which occurs in the course of that person's work and which is not excluded exposure.

operator

Any person or entity responsible for an operation which may lead to exposure to ionising radiation.

optimisation

a process or method used to make a system of radiation protection as effective as possible within the given criteria and constraints.

program of radiation protection

An instance of a system of radiation protection, designed for a particular operation.

public exposure

Exposure of a person, or persons, to radiation which is neither occupational nor medical exposure.

radiation

Electromagnetic waves or quanta, and atomic or sub-atomic particles, propagated through space or through a material medium.

radioactive material

Material which spontaneously emits ionising radiation as a consequence of radioactive decay.

radiofrequency

Electromagnetic energy with frequencies in the range 3 kHz to 300 GHz.

radiofrequency field

A physical field, which specifies the electric and magnetic states of a medium or free space, quantified by vectors representing the electric field strength and the magnetic field strength.

radiological emergency

An emergency in which there is, or is perceived to be, a hazard due to:

(a) the energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction, or

(b) radiation exposure.

radionuclide

A species of atomic nucleus which undergoes radioactive decay.

radiopharmaceutical

A radioactive pharmaceutical administered to patients for medical diagnosis or therapy.

radon

Radon is a radioactive noble gas which is part of the uranium decay chain. Radon and some of its decay products are alpha particle emitters. Radon decays to form a series of short-lived radionuclides: Po-218, Pb-214, Bi-214 and Po-214. If these radionuclides are breathed in, they can attach to the lungs and respiratory tract. The subsequent radiological dose is recognised as one cause of lung cancers (WHO 2009; ICRP 2010).

Regulatory Impact Statement

A Regulatory Impact Statement (RIS) is required, under the Australian Government's requirements, when a regulatory proposal is likely to have significant impacts on business and individuals or the economy. The primary role of the RIS is to improve government decision-making processes by ensuring that all relevant information is presented to the decision maker when a policy decision is being made. A RIS is prepared for each of ARPANSA's Codes of Practice and Standards and contains a cost benefit analysis.

solaria

Salons for artificial sun tanning through exposure to ultraviolet radiation.

system of radiation protection

A generic process of radiation risk management designed to limit the health risks arising from exposure to radiation to acceptable levels in a manner which takes economic and social considerations into account.

UV Index Data

Simple numerical indication of the maximum solar UVR during the day, the higher the number, the higher the UVR hazard. The UV index is calculated from data collected by broadband detectors which measure the UV radiation from the sun. It is a scale primarily used in daily forecasts aimed at the general public.

X-ray

Ionising electromagnetic radiation emitted during the transition of an atomic electron to a lower energy state or during the rapid deceleration of a charged particle.

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