Australian Government

Australian Radiation Protection and Nuclear Safety Agency

ARPANSA

Annual Report of the Chief Executive Officer

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Annual Report of the Chief Executive Officer of ARPANSA 2012–13

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Australian Government

Australian Radiation Protection and Nuclear Safety Agency

8 October 2013

The Hon Peter Dutton MP
Minister for Health
House of Representatives
Parliament House
CANBERRA ACT 2600

Dear Minister

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 2012 to 30 June 2013.

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 2012–13 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 24 June 2013.

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 people 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 CEO to engage staff to assist in the performance of the Agency's statutory functions for the purposes of the *Public Service Act 1999.* ARPANSA is a prescribed Agency under the *Financial Management and Accountability Act 1997* within the Government's Health portfolio.

Responsible ministers and portfolio

During this financial year, the Parliamentary Secretary to the Minister for Health and Ageing had ministerial responsibility for ARPANSA.

Funding basis

ARPANSA is funded through appropriations received directly as part of the Federal Budget.

ARPANSA's own sourced income derives from: the sale of scientific services such as the Personal Radiation Monitoring Service; 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 2013 ARPANSA employed a total of 138 ongoing and 11 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.

'Protection of the public and environment from radiation requires a risk-informed approach which takes account of both safety and security. ARPANSA does this by providing appropriate and effective information on exposure to all sources of ionising and non-ionising radiation; interacting with and informing the Australian community about risks associated with exposure to radiation; and, promoting implementation of radiation safety measures that optimise protection of the public and the environment'

Where we work

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

Our mission

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

Our vision

In protecting people and the environment from the harmful effects of radiation, ARPANSA ensures that:

- 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 activities, in a manner that is commensurate with risk.
- radiation safety in Australia is current international best practice.
- the Agency takes a leading 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 and each Key Area is informed by strategies and associated activities which are defined annually 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 in the *Portfolio Budget Statements 2012-13* and performance is described in Part 3.

Our history

Protecting people 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 established as the Commonwealth Radium Laboratory, responsible for providing advice to Government and the community on health effects of radiation, and for undertaking research and providing services in this area.

1984-1985

The Australian Radiation Laboratory conducts preliminary studies on former British atomic test sites at Maralinga indicating significantly higher contamination levels than previously reported.

1986

The Australian Radiation Laboratory's findings convince the Australian Government to set up a technical assessment group to oversee further technical studies of Maralinga site and advise on rehabilitation options.

1992

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

1993

Australian Radiation Laboratory scientific experts commence work as part of the Maralinga Rehabilitation Technical Advisory Committee – a whole of Government initiative – to evaluate radiological risks and develop an effective clean-up and land remediation of contaminated sites to minimise risks to potential inhabitants from radiation exposure.

1994-2000

Work on the Maralinga Rehabilitation Technical Advisory Committee Project commences during which Australian Radiation Laboratory and later ARPANSA, takes comprehensive measurements of the site. Project teams remove large quantities of plutonium-contaminated soil from three sites for safe containment in purpose-built burial trenches. Completion of the Project results in much lower levels of radiation than was predicted in the original MARTAC report.

'As the Commonwealth regulator, 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.'

1996

Responsibility for the Australian primary standard of absorbed dose in medical radiation exposures is transferred to the Australian Radiation Laboratory, as provided for by the *National Measurement Act 1960.*

1997

The Federal Government announces that it will combine the Australian Radiation Laboratory and the Nuclear Safety Bureau and establish ARPANSA as a new regulatory body with underpinning legislation - the *Australian Radiation Protection and Nuclear Safety Act 1998* (the ARPANS Act).

1998

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

5 February 1999

ARPANS Act enters into force.

17 March 1999

ARPANS Regulations enter into force.

15 April 1999

Dr John Loy appointed as first CEO of ARPANSA.

22 April 1999

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

1999

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

National Health and Medical Research Council ceases publishing Radiation Health Series and hands responsibility for revision to ARPANSA to develop in its new Radiation Protection Series.

1 June 1999

ARPANSA sets up monitoring stations in Perth and Melbourne as part of the International Monitoring System 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 Maralinga site as a controlled facility under the ARPANS Act.

5 April 2002

ARPANSA licenses ANSTO to construct a new research reactor, the Open Pool Australian Light-Water reactor (OPAL) to replace ANSTO's HIFAR reactor.

Our history

Protecting people and the environment from the harmful effects of radiation

14 July 2006

ARPANSA issues ANSTO's OPAL reactor 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 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 formal handback ceremony of Maralinga lands to Traditional Owners, the Maralinga Tjarutja.

22 March 2010

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

1 July 2010

The Australian National Radiation Dose Register is established to collect, store, manage and disseminate records of radiation doses received by uranium miners in the course of their employment in a centralised database. The Dose Register 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) officially launched 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 disaster to advise the Australian Government and public on the scope and likely effects of the event.

May 2011

Formal organisational restructure of ARPANSA rolled out.

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

December 2011

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

February 2012

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

June 2012

ARPANSA republishes Radiation Protection Series No 18 - *Safety Guide for the Use of Radiation in Schools* and RPS 18 now incorporates Part 1: Ionizing Radiation and Part 2 Lasers.

August 2012

ARPANSA publishes 2013-16 Corporate Plan and 2012-13 Regulatory Plan.

October 2012

ARPANSA assesses that the impact on health of people living in Australia from the Fukushima Dai-ichi nuclear power plant accident is negligible, based on measurements and studies undertaken by ARPANSA since March 2011.

ARPANSA receives licence applications from ANSTO to site and construct an interim waste store and to prepare a site for the proposed Nuclear Medicine Molybdenum-99 Facility.

November 2012

ARPANSA publishes *Safety Guide for the Approval Processes for the Safe Transport of Radioactive Materials (2012)* – Radiation Protection Series No. 2.2.

ARPANSA releases documentation to support licence holders using a holistic approach to manage the safety of their operations.

Our history

Protecting people and the environment from the harmful effects of radiation

December 2012

ARPANSA licenses ANSTO to operate the Australian Synchrotron from 1 January.

ARPANSA's CEO is appointed as Chair of United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).

ARPANSA's CEO delivers Australia's Statement to the IAEA/Japan jointly-hosted Ministerial Conference on nuclear safety, held in Koriyama, Fukushima Prefecture, Japan.

January 2013

ARPANSA updates its *Regulatory Guide: Plans and Arrangements for Managing Safety* which has enhanced arrangements for environmental protection based on current international best practice. Where relevant, radiation protection of wildlife in their natural habitats is to be considered in parallel with radiation protection of people, and the guide establishes a screening dose rate for wildlife assessments.

February 2013

ARPANSA CEO chairs IAEA International Experts Meeting on Decommissioning and Remediation after a nuclear accident in Vienna, Austria .

March 2013

Regulatory Guide: Licensing of Radioactive Waste Storage and Disposal Facilities released providing guidance in the future establishment of a national facility.

May 2013

16 May – ARPANSA hosts community information session on ANSTO licence applications for proposed Nuclear medicine Molybdenum-99 Facility and Interim Waste Store.

27-31 May – ARPANSA CEO and staff attend and lead the 60th Session of United Nations Scientific Committee on the Effects of Atomic Radiation in Vienna, Austria to deliberate upon key scientific annexes on the health effects following the Great East Japan Earthquake and Tsunami and health effects of CT scans on children.

June 2013

Staffing realignment of ARPANSA implemented.

ARPANSA invites public submissions on draft document *Fundamentals for Protection against Ionising Radiation.*

Guide for Regulatory Officers on Risk Ranking Methodology published.

Part 1: Review by the CEO

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

I am pleased to present to you the fifteenth *Annual Report of the CEO of ARPANSA*, the fourth under my stewardship of the Agency. In this review, I present highlights in radiation protection and nuclear safety during the year, as well as some corporate developments.

International and National Perspective

Even though many months have elapsed since the nuclear accident at the Fukushima Dai-ichi nuclear power plant in Japan, the accident continues to be a major consideration in international and national efforts to enhance nuclear safety, and assessments of the health implications are ongoing. Even at the end of the year, radioactive substances continued to leak from the site to the marine environment. Workers on site are tasked with complex operations including preventing further leaks, decontamination of the site, removal of fuel from the storage pools adjacent to the reactors, and the planning and subsequent execution of dismantling works. A very large number of people, previously living close to the power plant and in the so-called deliberate evacuation zone extending to the north-west of the facility, remain displaced. The nuclear accident has aggravated the already considerable human and societal toll taken by the Great East-Japan Earthquake and Tsunami, which includes the loss of approximately 20 000 lives as a direct consequence of the natural disaster.

The Government of Japan jointly with the International Atomic Energy Agency (IAEA) organised a Ministerial Conference on nuclear safety, held in Koriyama, Fukushima Prefecture, in December 2012. I had the honour of leading the Australian delegation to the Conference. The Australian statement emphasised the need for implementation of the internationally agreed safety requirements and for further enhancing transparency and information exchange within the international peer review system.

The health implications of the accident have been the subject of a study by the World Health Organization (WHO), published early in 2013. The study was based on estimates of radiation doses, published in May 2012, on the basis of information available in the first few months after the accident.

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), which I Chair, has, on the basis of a much expanded database and longer follow-up time, arrived at broadly similar estimates of doses compared to the WHO data. It seems that the prevailing weather conditions and early implementation of countermeasures have limited radiation doses to the population. While it is important to remain cautious in drawing conclusions, due to large inherent uncertainties in the estimations, it now appears that the direct impact of radiation on the health of the population will be limited. However, the impact on social and mental wellbeing is substantial. In conclusion, there is never any room for complacency and the vigilance on safety needs to be continued to further reduce likelihood and consequences of major accidents, whilst accepting that such accidents indeed are possible.

The IAEA is performing a comprehensive study of the accident, at the request of the IAEA Director-General Amano. The report will likely shed further light on the technical aspects of the accident. ARPANSA leads the working group on post-accident assessment. The report is planned to be finalised and delivered to Director-General Amano in 2014.

While the accident has had significant impact in Japan and internationally, in particular, in nuclear power countries, there have also been a number of significant developments nationally such as major investments into expanded radiopharmaceuticals

production at the Australian Nuclear Science and Technology Organisation (ANSTO) Lucas Heights site in Sydney's south-west. As a result of these, ARPANSA has received an application from ANSTO to prepare a site for a facility for production of molybdenum-99 (a precursor of technetium-99 used in nuclear medicine procedures), which will four-fold increase the production capacity at the site. The liquid waste from the production is planned to be treated and solidified using the Synroc (synthetic rock) technique, which if the plans go ahead will be the first large-scale utilisation of this technique. ARPANSA is currently reviewing an application from ANSTO to prepare a site for, and construct, a facility built for this purpose, the SyMo facility. I expect that I will be able to make determinations in relation to both applications early next financial year.

I have also received applications to prepare a site for, and to construct, an interim radioactive waste storage facility to be built at the ANSTO Lucas Heights site, which is intended to receive the waste resulting from the reprocessing of HIFAR[1] fuel in France and that will be returned from France in 2015, and potentially also for storage of similar type of waste returned from the United Kingdom around 2020. The need for an interim storage facility stems from the absence, at this point in time and in at least the next few years, of a national radioactive waste management facility. The technical review of the proposed interim storage facility was in an advanced stage at the end of the financial year. I expect to make a determination early in the next financial year.

Both the waste store and the radiopharmaceuticals production facility have been the subject of public consultation. The SyMo facility was included in the consultation because of its operational linkage to radiopharmaceuticals production, although public consultation was not legally required.

A number of other developments have occurred over the year. These include the issuing of an ARPANSA licence to operate the Australian Synchrotron in Melbourne (previously operating under a licence from the Victorian authorities) and a number of other activities in the regulatory, medical and scientific areas, with regard to both ionising and non-ionising radiation. These are covered in Report on Performance later in this Annual Report.

1 The High Flux Australian Reactor (HIFAR) operated between 1958 and 2007, when it was permanently shut down.

(From left to right:) Mr Denis Flory, IAEA Deputy Director General for Nuclear Safety and Security, Dr Carl-Magnus Larsson, CEO of ARPANSA, and Mr Greg Webb, IAEA Press and Public Information Officer, talking to the press after the week-long International Experts' Meeting on Decommissioning and Remediation After a Nuclear Accident. IAEA Headquarters, Vienna, Austria, 1 February, 2013 (Photo Credit: Ayhan Evrensel/IAEA)

Performance Against Corporate Key Performance Indicators

ARPANSA's activities are planned and executed within ten different Key Areas identified in the *ARPANSA Strategic Directions 2012-2016* (which are aligned with the obligations under the Australian *Radiation Protection and Nuclear Safety Act 1998* and other acts governing the Agency's activities (see: www.arpansa.gov.au/AboutUs/Corporate/strategic.cfm).

ARPANSA's Corporate Plan for 2012–2013, defines a number of Corporate Key Performance Indicators. These, together with the Portfolio Budget Statements, form a framework of benchmarks against which I can monitor progress in the Agency's delivery of radiation protection and nuclear safety to the Australian Government and community.

Progress against the Portfolio Budget Statements and Agency Business Plan are described in the *Report on Performance* section of this Annual Report.

REGULATION

Number of licensee incidents – less than 10 per annum

ARPANSA maintains regulatory oversight over 42 licensees, holding 33 facility licences and 61 source licences. The actual number of sources covered by the licences is in the order of tens of thousands. Table 17 in Appendix 7 provides further details. Among the licensees are a number of large organisations, including ANSTO, the Commonwealth Science and Industrial Research Organisation (CSIRO) and the Department of Defence. On the other end of the spectrum are a number of small licensees with only minimal use of radiation in their operations.

The definition of an incident for various uses of radiation is spelled out in the *National Directory for Radiation Protection* (Radiation Protection Series No 6). In the 2012–13 financial year there were six reports of incidents among Commonwealth entities holding an ARPANSA licence. This is consistent with the two preceding years (five in 2011-12; and four in 2010–11).

The safety of the operations is verified through quarterly and annual reports to ARPANSA and by means of the Agency's inspection program. As for the previous year, ARPANSA essentially met its target of sixty inspections and site visits in a year (fifty-nine were undertaken in 2012-13). During this financial year, most inspection reports have been made publicly available on the ARPANSA website to foster transparency and to improve safety accountability among licence holders as well as within ARPANSA itself.

Despite efforts among licence holders and ARPANSA's surveillance, five breaches with safety significance have been reported in the Quarterly Reports that are tabled in Parliament. Eight breaches with no or small safety significance were recorded as well. Corrective actions have been taken. A number of potential breaches were still under investigation at the end of the year.

Taken collectively, and notwithstanding the fact that breaches with safety significance have been identified, the information available to ARPANSA provides me with reasonable reassurance that the operations of licence holders are over-all safe.

Enhancement of the safety culture among licensees will be aided by the *Holistic Safety Guidelines* and associated *Sample Questions*, issued during the year, and by the holistic safety self-assessment tool that is currently trialled by some licence holders. Pilot assessments will include ARPANSA's Radiation Health Services Branch and Medical Radiation Services Branch. Looking ahead, I believe the application of the holistic safety assessment guidance and tools will provide ARPANSA with a deeper understanding of the safety culture among licensees as well as foster an improved safety culture.

Other key Agency activities in this space include: periodic safety review of the OPAL Reactor; review of ANSTO's emergency preparedness and response; and creation of a joint ARPANSA–Australian Safeguards and Non-Proliferation Office (ASNO) working group on nuclear security. These will all contribute to provide further insight into the safety and security of the operations of Australia's only nuclear facility.

A final remark on this topic is that ARPANSA's mandate is restricted to Commonwealth entities. However, ARPANSA has some insight in radiation safety more broadly through other mechanisms, such as the Australian Radiation Incident Register and the Australian National Radiation Dose Register, the latter developed and operated by ARPANSA to hold dose records for uranium mining

workers. Reporting to the Incident Register is the responsibility of each jurisdiction, whereas the uranium industry is obligated to report occupational doses to the Dose Register as part of licence conditions. Data available to ARPANSA at this point in time do not indicate any negative trends.

SCIENCE

Level of scientific achievement – 10 significant projects completed, more than 20 papers published

Scientific and regulatory staff at ARPANSA participate in a large number of international and national scientific fora and projects. The output from these activities includes the production of standards, recommendations, guides, methodologies, evaluation and original scientific publications, all of which are listed in Appendix 9.

ARPANSA is a World Health Organization (WHO) Collaborating Center in Radiation Protection and the Agency participates in both the Intersun Project (on ultraviolet radiation health) and the Electromagnetic Radiation Programme. ARPANSA, along with the Peter MacCallum Cancer Centre, participates in the Radiation Emergency Medical Preparation and Assistance Network. All of these activities provide ARPANSA with an excellent opportunity to interact with the scientific and health protection communities in areas of core relevance to the Agency's programs. ARPANSA staff also regularly participate in Task Groups that develop the recommendations of the International Commission on Radiological Protection (ICRP). From 1 July 2013, I will be a member of ICRP's Main Commission as well as Chair of Committee 5 (on environmental protection). Over the year, ARPANSA has participated in developing recommendations relating to radon progeny, geological disposal of radioactive waste, and protection of the environment under planned, emergency and existing exposure situations.

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) reports annually to the United Nations General Assembly on sources and effects of ionising radiation. Australia has been a member of UNSCEAR since its inception in 1955. UNSCEAR is composed of representatives from twenty-seven United Nations Member States with support from alternate representatives and advisers. I am currently the Australian representative and Chair of UNSCEAR.

At its 60th session, UNSCEAR agreed on the scientific conclusions in its scientific annex on *Levels and effects of radiation exposure due to the nuclear accident after the 2011 Great East-Japan Earthquake and Tsunami*, as well as in the annex on *Effects of radiation exposures of children*. Both studies will be published as scientific annexes to the 2013 Report to the United Nations General Assembly. ARPANSA also has the lead in UNSCEAR's ongoing collation of international data on exposure from medical uses of radiation.

SERVICE

Percentage customer satisfaction – greater than 80%

I note that in our most recent survey of licence holders, ARPANSA's performance as a regulator was rated excellent by 16%, good by 58%, and satisfactory by 26%. No licence holder rated our performance as either poor or very poor. Publication of our guidance documents rated particularly well as did our proportionate approach. Understandably, further reduction in application processing times would be appreciated.

Provision of services is a significant portion of ARPANSA's work. Services in terms of responding to telephone requests from members of the public, as well as regulatory services in the form of reviews and licensing, are not addressed here. However, the Agency provides specialised services in several areas, primarily the Personal Radiation Monitoring Service (PRMS) as well as the Australian Clinical Dosimetry Service (ACDS), calibration against the Australian Primary Standard for absorbed dose, and the Ultraviolet Protection Factor (UPF) fabric testing.

The PRMS is a commercial activity; however it is also strategic for a number of reasons. It makes Australia independent of international service providers whose service may become scarce in case of an emergency; it is capable of supporting ARPANSA staff and responders with personal radiation monitoring in case of a national emergency; and, it broadens the basis of expertise in dosimetry in the Agency – noting that dosimetry is a core competency in radiation protection. A major reinvestment program has commenced during the year, to be continued over several years, to modernise the service and adapt to customer needs.

The ACDS performs audits of linear accelerators (or linacs) used in therapy centres across Australia. The ACDS was established under a Memorandum

of Understanding between ARPANSA and the Department of Health and Ageing which commenced in 2011 and the Memorandum of Understanding will come to an end in the financial year 2013–14. The service is well on track in relation to the targets defined in the Memorandum of Understanding. It has also delivered pre-clinical audits to several centres that were not foreseen in the Memorandum of Understanding and has been very well received by the radiotherapy community. Its activities are currently audited by KPMG and I look forward to discussions with the Department of Health in the next year regarding future activities in this area.

ARPANSA holds the primary standard for absorbed dose in Australia; the secondary standards that are used for calibration in radiotherapy centres across Australia are traceable to the ARPANSA standard. In the future, ARPANSA will move towards direct calibration of secondary standards using its medical linac, and aim at gradually reducing the reliance on cobalt-60 calibration.

The UPF Testing Service evaluates the ultraviolet (UV) protection properties of fabric used for clothing. Garments with an approved UV protection rating may be issued with a 'swing tag' with the relevant UV protection factor indicated. Approximately five million swing tags are issued every year. The service is unique for Australia. The UPF testing area carries out client surveys bi-annually, the last one was in November 2012. No formal customer satisfaction survey has been performed this financial year.

The PRMS has grown slightly and the UPF Testing Service has been fairly stable. The calibration of secondary standards has increased slightly. The ACDS has been met with overwhelmingly positive responses. I conclude that the service provision has been met by a positive response in general; ongoing upgrading as well as improved customer surveys should lead to enhanced understanding of customer needs and improved service delivery.

FINANCE

Operation within budget

ARPANSA operated within its available financial resources during 2012–13. We report an operating deficit of $2.29m. This deficit is caused by depreciation and amortisation amounting to $2.33m for which no appropriation is needed. In total, we report a small surplus of $40k.

ARPANSA is committed to strong governance and the prudent management of resources in delivering its mandate to Government. The Agency continues to review all aspects of its delivery models to find ways of offering its services in a more efficient and economical manner. A number of innovative technological solutions were delivered during the financial year, consistent with this approach.

STAFF

Percentage staff satisfaction: more than 70%

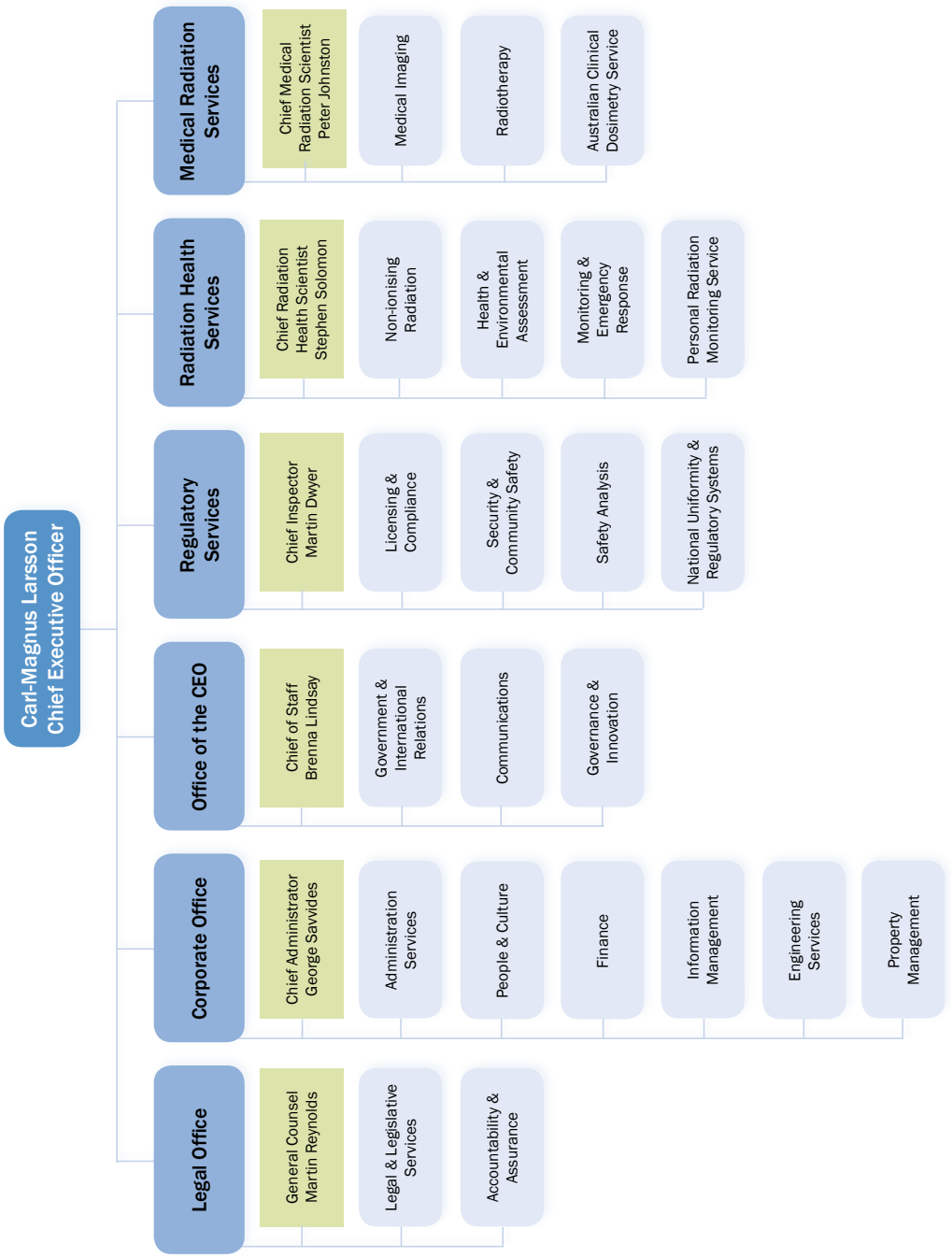
Historically, ARPANSA has been characterised by very low staff turnover which, while encouraging stability, can potentially make reorientation of the Agency more difficult to achieve. In addition, total staff numbers have been decreasing in response to financial trends and to meet mandated-efficiency dividends. At end of this financial year, ARPANSA had 140.77 full time equivalents comprising a total number of employees of 149; of which 138 were ongoing and 11 were non ongoing.

In order to sustain ARPANSA's delivery of health outcomes to the Australian Government and community, the Agency commenced a realignment towards the end of this financial year, which is expected to continue in the first part of the 2013-14 financial year. The term 'realignment' was chosen to differentiate it from an earlier major Agency restructure occurring in early 2011, noting that the realignment was designed to meet requirements of the *Strategic Directions 2012-16*. Whilst not as dynamic as the 2011 restructure, this realignment still affected about a quarter of the Agency's staff. The resulting organisational structure as outlined in Figure 1 took effect from 30 June.

ARPANSA took part in the 2013 APS employee census. Participation was extraordinary, 86 % compared to the APS average of 66%. As a matter of fact, ARPANSA ranked number four of all 113 APS agencies captured in the census. Whilst the high participation rate in itself does not tell us anything about the level of satisfaction, I still consider it an indicator of a very healthy engagement.

A fulsome analysis of the census data was not available at the end of June and analysis is still ongoing at the time of preparation of this report. However, the APSC has provided us with some preliminary data. It is satisfactory to see that some of the descriptors related to general satisfaction rate very highly, in many cases above 80% and often

Figure 1: Organisation Chart



above the APS average and above the previous years. Some descriptors rank less well, including performance management and management in general – however, also in these areas there are clear signs of improvement which is likely the result of a substantial investment over the year in executive leadership development including performance management that has been made available for staff from APS6 to Senior Executive Service level, and commencement of education for all staff with a focus on expectations of the Public Service.

Outlook for 2013–14

I intend to take every opportunity to work closely with my staff to continue to deliver a professional service to the Australian Government and community. Significant activities planned for the coming year include, but are not limited to, the following:

- Improving regulatory practice including further consideration of observations from reviews and audits
- Working with the Australian National Audit Office (ANAO) in their performance audit of the Agency's regulatory activities and taking action on resulting recommendations
- Continuing the implementation of ARPANSA's *Incident Management Plan* and establishing links to the *Business Continuity Plan* and other important risk mitigation strategies, with a view to execution of the plans in the future
- Working with the Portfolio Department on the sustained delivery of high-quality and well-audited therapy services across 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
- Reaching final decisions in relation to applications for a radiopharmaceuticals production facility, a waste treatment facility, and an interim store for intermediate level waste, submitted by ANSTO
- Finalising ARPANSA's assessment of the *Periodic Safety Review* of OPAL and the *Emergency Preparedness and Response Review* of ANSTO
- Enhancing the development of codes and guidance within the national uniformity process
- 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
- Continuing promotion of international safety and security in line with Australian obligations and priorities which includes reporting under the Convention on Nuclear Safety and under Code of Conduct on the Safety and Security of Radioactive Sources
- Continuing and expanding the interactions with the scientific community, nationally and internationally
- Further developing procedures for planning and internal accountability, including commencing work towards a certification of Agency operations according to ISO 9001
- Continuing the work towards a high-performing Agency with motivated and competent staff working in an environment that is conducive of both performance and satisfaction.

My assessment is that ARPANSA has a unique blend of staff with very high competence in many of the areas that are core to the Agency's delivery. We are, however, experiencing shortage in some areas and looking ahead, I can see that it will be difficult to replace some long-service experts when they retire, as the basis for this specialised knowledge in Australia, and elsewhere is thinning in important areas. I am therefore looking into continued participation in the international regulatory and scientific frameworks, establishing closer collaboration with expertise both nationally and internationally, and to recruit strategically as senior experts retire.

In conclusion, ARPANSA is an agency with a highly committed and very capable and competent workforce committed to continuous improvement; it is in a good position to tackle the challenges ahead.

Part 2: Agency Overview

Agency Overview

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 perform science and 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.

This financial year, the Parliamentary Secretary to the Minister for Health and Ageing had ministerial responsibility for ARPANSA.

The Radiation Health and Safety Advisory Council, the Radiation Health Committee and the Nuclear Safety Committee 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 Radiation Health Committee 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 Nuclear Safety Committee 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 Australian Government's primary authority on radiation protection and nuclear safety. ARPANSA regulates Commonwealth entities using radiation sources with the objective of protecting people and the environment from the harmful effects of radiation. ARPANSA promotes national uniformity and implementation of best international practice across all jurisdictions. ARPANSA's roles and responsibilities include the following:

- promote uniformity of radiation protection and nuclear safety policy and practices across jurisdictions of the Commonwealth, the states and the territories
- regulate the Commonwealth's use of radiation and nuclear technology
- undertake research in relation to radiation protection, nuclear safety and medical exposures to radiation
- provide services relating to radiation protection, nuclear safety and medical exposures to radiation
- accredit persons with technical expertise for the purposes of the ARPANS Act
- advise the government and the community about radiation protection and nuclear safety
- undertake scientific research and provides services in the field of radiation protection
- represent Australia in international fora 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 & Legislative Services and Accountability & Assurance. Legal Office staff are split between the Sydney and Melbourne offices.

The *Corporate Office* includes: Administration Services; People & Culture; Finance; Information Management; Engineering Services and Property Management. Corporate Office staff are located mainly in Melbourne but also in Sydney.

The *Office of the CEO* includes: Government & International Relations; Communications and Governance & Innovation. Office of the CEO staff are located in Sydney, Melbourne and Canberra.

The *Regulatory Services Branch* includes: Licensing & Compliance; Security & Community Safety; Safety Analysis and National Uniformity & Regulatory Systems sections. Regulatory Services staff are located mainly in Sydney but also Melbourne.

The *Radiation Health Services Branch* includes: Non-Ionising Radiation; Health & Environmental Assessment; Monitoring & Emergency Response and Personal Radiation Monitoring Service with all staff located in Melbourne.

The *Medical Radiation Services Branch* includes: Medical Imaging; Australian Clinical Dosimetry Service and Radiotherapy sections. Medical Radiation Services staff are located in Melbourne.

Corporate Planning – ARPANSA's Realignment

ARPANSA undertook a major restructure in 2011, (the 'Reform') which analysed the big picture of the Agency's structure. Since 2011, ARPANSA has more fully developed its Strategic Directions as well as a range of other operational plans.

ARPANSA has also been actively monitoring the progress of its implementation of the Reform. The most important of these was the 'Pulse Check Review' which identified that ARPANSA has good strategic capabilities, but leadership and service delivery have been inconsistent. This has resulted in both leadership development activities and realignment of resources to improve delivery.

In May 2013, ARPANSA's Strategic Management Committee met to discuss the long-term financial position of ARPANSA and the need for further realignment of the organisation (its structure and staffing) with the Strategic *Directions 2012-2016*. Our focus was on exploring opportunities to increase our efficiency and revenue on the basis of the strategic directions analysis to find an effective way forward. This is not only related to our main commercial activities but also to making sure that we accurately recover costs in our regulatory services. ARPANSA has committed to report to licence holders on cost recovery for its regulatory services on an annual basis.

ARPANSA intends to expand its alumni program to retain experience of older workers while putting in place predictable staff reductions for the future. These positions involve staff seeking to retire from the Agency while retaining a part-time role usually in a training and advisory capacity.

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 (from 2008 the Swedish Radiation Safety Authority after a merger with the Swedish Nuclear Power Inspectorate) focusing on environmental aspects of nuclear power. He subsequently became Branch Head and Deputy Director-General with responsibilities for, among other things, radiation protection, waste management, radioactive materials and emergency preparedness and response. Carl-Magnus coordinated the multinational European Commission-supported research projects FASSET and ERICA (both on environmental assessment and protection) between 2000 and 2007. Carl-Magnus is a member of the Main Commission of the International Commission on Radiological Protection and is the current 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

General Counsel – Mr Martin Reynolds

Martin Reynolds is ARPANSA's General Counsel and Head of the Legal Office since 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 objectives of the Legal Office are to provide high quality legal services that cut across all aspects of the Agency's operations and to assist the CEO achieve his statutory mandate. The Legal Office also assists the Agency to meet its obligations under applicable statutory frameworks such as the Government's financial management frameworks. This includes Internal Audit, Work Health & Safety, Certificate of Compliance Process, and Quality Management.

Corporate Office

Chief Administrator – Mr George Savvides

George Savvides is ARPANSA's Chief Administrator and was appointed Head of the Corporate Office upon its creation in May 2011. 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 joined the Agency in Feburary 2010.

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. Engineering Services provides mechanical/electronic engineering support to the Agency and is responsible for ensuring the maintenance of the Yallambie property facility.

Office of the CEO

Chief of Staff – Ms Brenna Lindsay

Brenna Lindsay is ARPANSA's Chief of Staff and Head of the Office of the CEO. She joined the Agency in February 2012, and commenced in her current role in September 2012.

Educated in communications, international relations and business administration, Brenna has worked in the Australian Public Service for over 11 years.

Brenna joined the Agency from the Australian Taxation Office where she held roles in strategic advice and governance. Prior to joining the Australian Taxation Office, Brenna held positions in the Australian Federal Police, ACT Policing, and the Department of Immigration and Citizenship, undertaking a variety of coordination functions across international policy, capacity building, ministerial services, strategic advice, strategic planning, media and marketing management, and government relations.

Brenna leads ARPANSA's coordination functions such as the Agency's briefing, correspondence and Cabinet matters, strategic advice, external relations and communications, strategic planning, risk and quality management.

She has oversight of International and Government Relations, Communications, and Governance and Innovation Sections, and has responsibility for a coordinated approach to Agency emergency preparedness and response.

Regulatory Services

Chief Inspector – Mr Martin Dwyer

Martin Dwyer is ARPANSA's Chief Inspector and was appointed as Head of Regulatory Services Branch 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 Regulatory 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.

Regulatory 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 falls 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

Chief Radiation Health Scientist – Dr Stephen Solomon

Stephen Solomon is acting Chief Radiation Health Scientist and has been head of the Radiation Health Services Branch since its creation in May 2011. Prior to his current appointment, Stephen was Manager Health Physics Section, Environmental and Radiation Health Branch, ARPANSA. Stephen has a PhD in Nuclear Physics with over thirty years' experience in health physics and radiation protection.

He leads and coordinates ARPANSA activities as a World Health Organization (WHO) Collaborating Center for Radiation Protection and as a member of WHO Radiation Emergency Medical Preparedness & Assistance Network (REMPAN). 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 of Levels and Effects of Radiation Exposure due to the Nuclear Accident after the 2011 Great East Japan Earthquake and Tsunami.

The work of the Radiation Health Services Branch is focused on delivering ARPANSA radiation protection outcomes including: maintaining systems for the measurement of radioactivity in people and the environment; supporting the development of frameworks for radiation protection; supporting Australian radiation emergency preparedness and response to nuclear radiological emergencies; monitoring and providing advice on population exposures to non-ionising radiation; advising on radiation protection for occupational health and safety exposure from man-made and naturally occurring ionising radiation; and the provision of a Personal Radiation Monitoring Service for exposures of workers across a variety of occupations.

Medical Radiation Services

Chief Medical Radiation Scientist – Prof Peter Johnston

Peter Johnston is ARPANSA's Chief Medical Scientist and was appointed as 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 (UMPNER) 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 outcomes of: correct dose delivery to patients in radiotherapy procedures; delivery of clinically adequate images affecting patient management using minimal doses; effective communication and interaction between ARPANSA, state and territory agencies, the medical profession and other professional bodies, patients and carers.

Strategic Management Committee

ARPANSA's Strategic Management Committee (SMC) is tasked with decision-making for the Agency and is composed of the Executive Group plus one external member. During this financial year, Dr Sue Barrell was the external member of the Strategic Management Committee.

Sue Barrell is the Acting Deputy Director (Information Systems and Services) and Chief Information Officer at the Bureau of Meteorology. Sue was appointed in July 2013 to head the Bureau of Meteorology's Information Systems and Services Division, which provides a whole-of-enterprise approach to all aspects of data and information, IT services and applications, and digital delivery. For the previous nine years, she led the Bureau's Observations Programs, which deliver the space-based, surface-based and airborne observations of the atmosphere, land and oceans required to sustain the Bureau's weather, climate, water and environmental services to the Australian community. Earlier roles focused on climate policy and research. Sue has worked extensively with colleagues and partners across government and internationally on earth observations, climate monitoring and data exchange. She belongs to national bodies responsible for radio spectrum and space, is Vice-president of the World Meteorological Organization's Commission on Basic Systems and is Australia's Principal Delegate to the intergovernmental Group on Earth Observations. Sue served as the external member of ARPANSA's SMC (formerly Executive Board of Management) from 2006 to 2013.

Sue finished her tenure on the SMC in June 2013 and the new external member will be Ms Megan Morris, who is First Assistant Secretary in charge of the Office of Health Protection, Department of Health.

Our People

At 30 June 2013 ARPANSA employed a total of 149 staff. An organisation chart is provided at Figure 1.

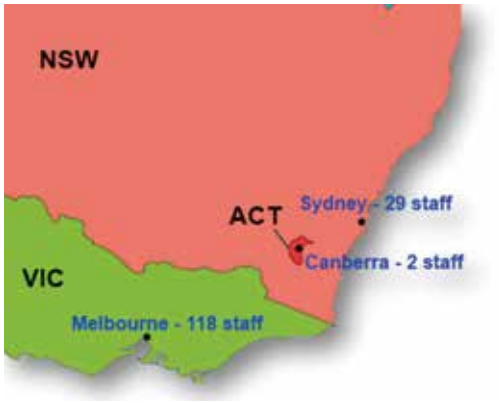


Figure 2: Map shows distribution of staff across New South Wales, Victoria and the Australian Capital Territory

Outcome and Program Structure

For the 2012–13 financial year, ARPANSA's activity, resource and performance reporting fell under its outcome – Protection of people and the environment through radiation protection and nuclear safety research, policy, advice, codes, standards, services and regulation.

The three stated major activities contributing to the program reported in the *Portfolio Budget Statements 2012-13* aim to:

- protect the public, workers and the environment from radiation exposure
- promote the effective use of ionising radiation in medicine
- ensure effective regulation and enforcement activities.

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

Engaging with Stakeholders

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 ANSTO's licence applications for the proposed Intermediate Waste Store at Lucas Heights Science and Technology Centre, the ANSTO Nuclear Medicine Molybdenum-99 Facility and the ANSTO SyMo Facility as well as on our draft document *Fundamentals for Protection against Ionising Radiation*. Appendix 1 sets out ARPANSA's stakeholder engagement activities for 2012–13.

Engaging Internationally

ARPANSA's international engagement enhances the safe and secure use of radiation in Australia by ensuring that our national activities are based on international best practice in radiation protection and nuclear safety and radioactive material security.

For ARPANSA to operate effectively in today's complex international environment, it has focused on balancing long-term planning with responsive and flexible requirements placed on the Agency by the Government of the day. We have developed an *International Engagement Strategy* which clearly articulates our international engagement priorities and will guide forward planning, improve decision making and remove any duplication of effort.

ARPANSA participates in the deliberations of global scientific networks such as the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the International Commission on Radiological Protection (ICRP), the World Health Organization (WHO) and closely follows the work of the International Commission on Non-ionizing Radiation Protection (ICNIRP).

We contribute to the development of the IAEA safety standards through the Commission on Safety Standards and the IAEA Safety Standards Committees in the areas of radiation protection, transport of nuclear and radioactive material and the safe management of radioactive waste. With the Australian Safeguards and Non-Proliferation Office (ASNO), we guide the drafting of IAEA nuclear security series through membership of the Nuclear Security Guidance Committee. Combined, the Commission and Committees, establish the internationally recognised and adopted standards and practices for nuclear safety and security.

ARPANSA supports the global nuclear safety framework through representation at Convention

on Nuclear Safety meetings and ongoing efforts to implement the IAEA Action Plan on Nuclear Safety. We support Australia's nuclear non-proliferation goals through participation in the Comprehensive Nucler-Test-Ban Treaty Organization's working group on nuclear weapons test verification.

ARPANSA coordinates its activities with other Australian Government agencies including the Department of Foreign Affairs and Trade; the Department of Health; the Department of Innovation, Science and Research; the Department of Resources, Energy and Tourism; and the Attorney-General's Department.

The Agency supports international and regional regulatory, radiation protection and emergency response capacity building through our work in a range of key international bodies such as the IAEA, the Asian Nuclear Safety Network, the IAEA's Response and Emergency Network (RANET) and the WHO Radiation Emergency Medical Preparedness and Assistance Network (REMPAN). ARPANSA is also a designated WHO Collaborating Center for Radiation Protection.

ARPANSA has healthy bilateral relationships with regulators and radiation protection research institutions in the United Kingdom, Ireland, Denmark, the United States of America, Sweden, the United Arab Emirates, Norway, Canada and Indonesia.

Financial Report on Performance

For the financial year ending 30 June 2013, ARPANSA reported an operating deficit of $2.29m. This deficit is attributed to $2.33m depreciation and amortisation expense not requiring appropriation.

Revenue for the year totalled $25.1m, of which 54% was appropriated by Government. The remaining amounts related to regulatory licence fees and charges and from the sale of goods and services.

ARPANSA's expenses totalled $27.4m. Approximately 63% are attributed to employee benefits, 9% relates to depreciation and amortisation expenses and the remainder being suppliers expense.

The Agency continues to review the efficiency and effectiveness by which it delivers its program, to ensure we operate within our financial constraints.

Part 3: Report on Performance

Protect the Public, Workers 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 effects of radiation in the environment, and providing guidance and advice to industry and the public on how best to mitigate these effects. During this financial year, the Agency delivered comprehensive assessments on environmental and health impacts of the Fukushima Dai-ichi nuclear accident on people living in Australia and continued to screen food samples from Japan. Domestically, ARPANSA completed work on environmental and health assessments of inhabitants of the Oak Valley region where residual radiological contamination is left over from British atomic tests conducted in the 1950s. Measurements and advice spanning a range of occupational exposure situations was completed and the Agency continued to fulfil its requirements under the terms of the Comprehensive Test Ban Treaty (CTBT).

Environmental Protection and Health Assessments

The Agency assessed that the health impact of people living in Australia from the Fukushima Dai-ichi nuclear power plant accident to be negligible and these findings were published as Technical Report *Assessment of the impact on Australia from the Fukushima Dai-ichi nuclear power plant accident*.

An assessment was made of the health impact on local peoples living at Oak Valley due to radiological contamination from historical British nuclear weapons testing. Oak Valley is a remote Aboriginal community located on the southern fringe of the Great Victoria Desert on Maralinga Tjarutja Lands in South Australia. ARPANSA published a series of reports on this assessment and reported to the local community that radionuclide contamination from the historical British nuclear weapons testing had a negligible impact on health for Oak Valley village residents and that the current restrictions on full time living in the Taranaki restricted area at Maralinga still remain appropriate. Work was completed on a project which collates existing Australian data holdings on concentration ratios for flora and fauna in uranium mining environments, in collaboration with industry and which was sponsored by the Department of Resources, Energy and Tourism.

The Agency also participates in projects under the auspices of the International Atomic Energy Agency (IAEA). Notably, our experts attended the IAEA Modelling and Data for Radiological Impact Assessments (MODARIA) technical meetings in Vienna, Austria. The aim of this program is to improve capabilities and establish best international practice in environmental radiation dose assessments. These technical meetings established a Working Group to assess radio-ecological data in IAEA Technical Reports Series publications to identify key radionuclides and associated parameter values for human and wildlife exposure assessment. ARPANSA'S participation in the MODARIA program will enable the Agency to incorporate international best practice directly into the development of the *Safety Guide for Environmental Radiation Protection in Australia*.

Screening Food Samples

During the year, ARPANSA's Radiochemistry Laboratory delivered a range of commercial services, and provided laboratory services for the screening of food samples from Japan as part of the Department of Agriculture, Fisheries and Forestry's Imported Food Program. Work also commenced on a survey of Australian dietary exposure to radionuclides in collaboration with Food Standards Australia New Zealand (FSANZ) as a part of the 25th Australian Total Diet Study.

Ultraviolet Radiation Protection

Through its solar ultraviolet radiation (UVR) programs ARPANSA continues to monitor public exposure to solar ultraviolet radiation to improve understanding of ways to reduce exposure. Against the backdrop of Australia's high rates of skin cancer, with over 400 000 new cases each year, ARPANSA continues to measure and report daily solar UVR 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.

Research has shown that a reduction in UVR exposure will lead to a reduction in skin cancer incidence and the use of sun protection (clothing, hats, sunscreen, sunglasses and shade) can play an important role in this. ARPANSA's National

Association of Testing Authorities (NATA)-accredited Ultraviolet Protection Factor (UPF) Testing Service tests over two thousand samples of sun protective clothing and hats annually and issues four million labels for sun protective clothing. Since the testing service began, over 67 million UPF rating swing tags have been issued. These UPF tags are designed to raise consumer awareness of sun protection strategies.

The ARPANSA UVR monitoring network continues to provide real-time 'live' ultraviolet (UV) Index and Exposure data for eleven Australian sites and four Antarctic bases via the ARPANSA website. The UV Index data (which is updated every minute) is also delivered 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 Cancer Council Victoria, Queensland Health and with the Australian National University for indoor workers and for different population groups.

ARPANSA continues to work within the UV Alert Group (which includes the Cancer Councils from every state and territory, the Bureau of Meteorology and, more recently, New Zealand Cancer Council and New Zealand Health Sponsorship Council) 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 Center 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 ultraviolet radiation exposure encouraging countries to reduce ultraviolet radiation-induced health risks through provision of guidance about effective sun awareness programs. In June 2013, ARPANSA attended the annual international advisory committee Intersun UVR meeting in Paris and reported on ARPANSA's current ultraviolet radiation work programs.

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 which recommended banning solaria use by

Fitzpatrick Skin Type Scheme - the most commonly used scheme to classify a person's skin type by their response to sun exposure in terms of the degree of burning and tanning.

persons under eighteen years of age and those with very fair skin (skin type 1 according to the Fitzpatrick Skin Type Scheme). While these elements have now been implemented across all jurisdictions, most of the states and territories have indicated that they are now moving towards banning commercial use.

The Fitzpatrick Skin Type Scheme is used to classify a person's skin type by their response to sun exposure in relation to the degree of burning or tanning following exposure.

Occupational Exposure to Ultraviolet Radiation

ARPANSA's Radiation Protection Standard (RPS 12) *Radiation Protection Standard for Occupational Exposure to Ultraviolet Radiation* covers exposure to ultraviolet radiation 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 ultraviolet

radiation from artificial sources in the workplace, considered to be a controlled environment; and setting requirements for minimising a person's exposure to uncontrollable sources of ultraviolet radiation, such as the sun. While mandatory application of the limits for solar ultraviolet radiation exposure to outdoor workers is difficult in practice, it is important to limit ultraviolet radiation exposures using engineering and administrative controls as well as personal protection.

Occupational Exposure - Uranium Mining

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.

Promotional poster developed as part of the educational outreach program for the Australian National Radiation Dose Register

Uranium workers are one of the more highly exposed occupational groups requiring protection from the harmful effects of ionising radiation. Radiation protection of workers requires the maintenance of radiation dose records to assess compliance with occupational dose limits and to minimise the radiation health risk to individuals through the continual improvement of work practices.

ARPANSA operates and maintains the Australian National Radiation Dose Register (the Dose Register), for the collection, storage and auditing of radiation dose histories for uranium industry workers in Australia. The Dose Register consolidates and stores radiation dose records to allow for tracking of a worker's dose records throughout their career in the uranium mining industry.

The Dose Register currently holds dose history records for more than 25 200 workers from the uranium mining and milling industry. ARPANSA also manages an educational outreach program for uranium miners to inform them how to retrieve and interpret their dose history records to assist them to safely manage their radiation exposure in the workplace. This program has been delivered to Beverley, Olympic Dam and Ranger uranium mine workers.

ARPANSA is currently seeking to expand the Dose Register beyond uranium mining to cover occupationally exposed workers in other industries. During this financial year, ARPANSA commenced a review of the Australian mineral sands mining and processing industry to inform future decisions for possible expansion of the Dose Register to include these workers. ARPANSA is also investigating options to include occupationally exposed Commonwealth employees in the Dose Register. The key findings and recommendations for expansion of the Dose Register will be published later in 2013.

The information collected through meetings undertaken this financial year with the United Kingdom Health Protection Agency and Health Canada will assist ARPANSA to enhance the functionality of the Register's database and to ensure that operational procedures accord with international best practice, and to identify impediments likely to impact on future expansion of the Register to other industries. In March 2013, ARPANSA was invited to deliver a presentation at the Siemens Low Dose Academy Forum on the role

of the Dose Register for radiation protection of workers. The Forum provided a unique opportunity for ARPANSA to raise awareness for workers in the medical sector about the Australian radiation protection framework and occupational risks of exposure to radiation in the workplace, together with the role of Dose Register as a tool for the optimisation of worker protection.

In relation to the deliverable (set out in the table below) referring to controlling doses to uranium workers, trend data will become more meaningful when all uranium mines are reporting their data to the Dose Register. At the present time ARPANSA is receiving data from 95% of the uranium mining workforce. On 4 July 2012, dose records from workers at the Ranger uranium mine were first submitted to the Dose Register following delays caused by legal issues associated with privacy legislation in the Northern Territory preventing the disclosure of that information and resolved by the passage of the Northern Territory Radiation Protection Amendment Act 2012 which came into effect on 2 July 2012. The final mine, Honeymoon, has been experiencing technical database issues which have prevented their upload of dose data to the Register however, it is expected to be providing data later in 2013. In the interim, we have focused upon reporting trends to key stakeholders as required, or on request, and ARPANSA is confident that this measure has been successfully met. ARPANSA also contributed Dose Register data to an IAEA questionnaire on occupational exposure in the uranium mining industry in Australia. Analysis of the IAEA survey aims to provide a global overview of occupational radiation protection practices in the uranium mining and processing industry, enabling the identification of good practices, existing deficiencies and the need for future action.

Occupational Exposure – NORM

During this financial year, ARPANSA published a survey of naturally occurring radioactive material (NORM) associated with mining, which reported results for samples collected from selected metal mines, collieries and quarries in New South Wales. This survey showed that, for the mines sampled, except in the case of mineral sands mines, the levels of radioactivity were consistent with values commonly obtained for soils, and would therefore pose negligible radiation risks.

Performance Against KPIs - Qualitative Deliverables

Protect the public, workers and environment from radiation exposure	
Devise UV protection strategies for the Australian population and assess their effectiveness	
Measure	Enhanced UV exposure assessment system in place by June 2013
Result	*ARPANSA introduced electronic UV dosimeters measuring UV exposures and the time they occur which have been used in a number of studies of various population groups and outdoor workers*
Enhanced system for response to radiological and nuclear threats and events consistent with international guidance and best practice	
Measure	Documented arrangements for ARPANSA radiation emergency response in place by end of 2012
Result	*Completion of ARPANSA's Incident Management Plan in 2012 and testing of its efficacy conducted in conjunction with partner agencies in January 2013*
Control radiation dose to uranium mining workers	
Measure	Annual reporting of trend in radiation doses received by workers compiled from Australian National Radiation Dose Register provides evidence of optimisation of radiation protection in the uranium mining industry.
Result	*Delivered by providing trend updates at national stakeholder meetings, conferences and Senate Estimates. ARPANSA also contributed trend data to the IAEA for the investigation of occupational radiation protection practices in the uranium mining and processing industry worldwide.*

Personal Radiation Monitoring Service

In 2012–13 the Personal Radiation Monitoring Service (PRMS) continued to provide a high quality, NATA-accredited commercial service for the monitoring the exposures of workers in the medical, dental, chiropractic, industrial and mining fields to ionising radiation. In 2013, ARPANSA committed to a technology upgrade in early 2014 to deliver a lighter pre-assembled monitor with lower detection limits which will increase occupational safety and provide improved convenience and ease of use for clients.

Monitor Population Exposures to Electric and Magnetic Fields and Electromagnetic Radiation (EMR)

ARPANSA continued to provide scientific advice and guidance to the public and the government on exposure to electromagnetic radiation from electrical power infrastructures, mobile telephone handsets and base stations as well as other sources from emerging technologies such as smart meters. The Agency's work included 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 guidance is consistent with international best practice and new scientific developments.

ARPANSA continued its limited, but important, program monitoring public exposure to radiofrequency electromagnetic energy (RF EME), measuring exposure levels from mobile telephone base stations and publishing comparisons with the EME predictions made by industry in accordance with ARPANSA guidelines. The Agency also responded to a variety of public and media enquiries focusing upon health concerns related to human exposure to mobile telephones, base stations, Wi-Fi, smart meters and other established and emerging technologies.

ARPANSA, as a WHO Collaborating Center on Radiation Protection, is also a member of the WHO International Electro Magnetic (EMF) Project. In June 2013, ARPANSA chaired the Annual International Advisory Committee meeting of the WHO International EMF project held in Paris, France. This meeting confirmed ARPANSA's position as a key international authority and the information obtained will assure that Australia retains a sound, best-practice radiation protection framework.

ARPANSA continued its base station survey program to inform the public about actual exposures in close proximity to mobile telephone base stations and validate mathematical predictions. During this financial year, the Agency undertook six mobile telephone base station surveys, publishing the results on the ARPANSA website.

Extremely Low Frequency (ELF) Electric and Magnetic Fields Project

Following the March 2011 decision by the Radiation Health Committee (RHC) to cease development of an ELF Standard and to redraft the document as guidelines, a significant amount of revision work has been undertaken, including substantial harmonisation with international ELF guidelines, 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).* A revised draft has been circulated to jurisdictions for comment and to the RHC Working Group responsible for the original draft standard and to the stakeholder Consultative Group. In the light of comments received, the Radiation Health Committee agreed that the document be further streamlined and clarified. Accordingly, a draft based on these recommendations is undergoing final editing. Subject to agreement by the Office of Best Practice Regulation in the Department of Finance regarding the necessary supporting documentation, publication of new ELF guidelines is expected in the 2013–14 financial year.

Comprehensive Nuclear Test-Ban Treaty

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) bans all nuclear explosions, whether they are for civilian or military purposes. An International Monitoring System was established to monitor compliance with the CTBT.

As a signatory to the CTBT, Australia is committed to establish, operate and maintain nine air monitoring facilities which form part of the International Monitoring System. During this financial year, 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) was completed this financial year, including certification of the station by the Comprehensive Nuclear-Test- Ban Treaty Organization (CTBTO). In addition to operating the stations, ARPANSA operates the Australian CTBT Radionuclide Laboratory, which tests samples obtained by other CTBT radionuclide monitoring stations. During this financial year, the CTBTO undertook a triennial on-site surveillance visit, resulting in continued certification of the laboratory. The CTBT Radionuclide Laboratory has obtained A-grade results for its past two CTBTO Proficiency Test Exercises.

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. Australia's national inventory of radioactive waste is maintained and published by ARPANSA on the IAEA website for the Net Enabled Waste Management Database (NEWDB)[1], as part of our commitment to the *Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management*.

ARPANSA has continued with progress in the development of regulatory standards to ensure high levels of safety in the way that Australia manages its radioactive waste. ARPANSA provides the Chair of the IAEA Waste Safety Standards Committee which is the prime committee responsible for developing international best practice in radioactive waste safety. In the past year, the IAEA with Australian input, has updated its safety standards in many areas relevant to Australia including *Near Surface Disposal of Radioactive Waste* and *Decommissioning of Nuclear Facilities*.

In August 2012, ARPANSA invited public submissions on its Draft Regulatory Guide: *Licensing of Radioactive Waste Storage and Disposal Facilities* which received mostly positive and supportive public feedback. This document contains requirements and guidance to inform potential applicants seeking regulatory approval to site, construct, operate and decommission a radioactive waste storage or disposal facility.

The Regulatory Guide refers to storage as the placement of radioactive waste in a specific facility, with an intention to retrieve it for actions related to its final management and ultimate disposal, and where appropriate isolation and monitoring are provided and designed to last for decades. The Regulatory Guide addresses both safety and security and is directed towards purpose-built stores with an anticipated operational life of up to 50 to 100 years rather than small-scale laboratory storage of small quantities of waste items. Specific disposal options include near-surface disposal for Low Level Waste and borehole, tunnel, cavern and shaft type disposal facilities for intermediate level waste.

The Regulatory Guide is directed to Commonwealth entities applying for a licence under the ARPANS Act to prepare a site for, construct, operate, and

1 The NEWMDB contains information on national radioactive waste management programs, radioactive waste inventories, radioactive waste disposal, relevant laws and regulations, waste management policies, and plans and activities.

ARPANSA scientists travel to the Comprehensive Nuclear-Test-Ban Treaty stations on the Australian Antarctic Division's Aurora Australis Icebreaker

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 describing the overarching statutory considerations
- assist in understanding the requirements for the content of an application and addressing 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 assist in achieving high levels of safety.

The new regulatory guidance has been used in ARPANSA's review of ANSTO's licence application to site and construct an interim radioactive waste store. The new regulatory guide will also inform the licensing regime for Australia's National Radioactive Waste Management Facility. The CEO's decision is ultimately based upon the applicant's demonstration of a robust safety case describing organisational and technical arrangements of any potential site. Applicants seeking to carry out conduct related to a storage or disposal facility must demonstrate that the proposed facility will achieve the required level of protection. Applicants are required to present a safety case which draws upon the organisational and technical arrangements put in place, the nature of the waste to be accepted, site characteristics, facility design, including engineered barriers, and arrangements for construction, operation, decommissioning or closure and post-closure stages, as appropriate.

A final version of the Guide, which included consideration of public submissions, was published in March 2013 and is accessible on ARPANSA's website at link: http://www.arpansa.gov.au/Regulation/wasteguide.cfm.

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.

The 2012 edition of IAEA *Regulations for Safe Transport of Radioactive Material* (SSR-6) was published in October 2012. ARPANSA is in the process of adopting these Regulations into the national ARPANSA *Code of Practice for Safe Transport of Radioactive Material* and the corresponding safety guides.

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 unusual position of having many competent authorities, all of whom can provide certification. This financial year ARPANSA published a *Safety Guide: Approval processes for the safe transport of radioactive materials* (Radiation Protection Series No. 2.2) on its website. This Transport Safety Guide will assist Australian regulators and industry to interpret the detailed provisions in the Transport Code in order to facilitate their compliance with the Code. Both the Transport Safety Guide and the Transport Code describe the administrative and legal requirements for obtaining certification in Australia, outlining what the competent authority does and describing points of contact to achieve certification of packages, radioactive material and the shipment of radioactive material.

During this financial year, ARPANSA approved the shipment of nuclear and radioactive material under special arrangements issuing the following certificates for these shipments:

- AUS/2012-45/B(U)F-96T
- AUS/2013-46/X.

Australian Government Visiting Ships Panel (Nuclear)

ARPANSA chairs the Technical Working Group of the Visiting Ships Panel (Nuclear), an Australian Government Inter-Agency Committee that oversees the arrangements for visits to Australian ports by nuclear powered vessels. As part of the role as the Working Group Chair, ARPANSA (in conjunction with the Australian Defence Force, ANSTO and the Queensland Government) conducted a Nuclear

Powered Warship pre-visit Emergency Response Exercise in order to validate arrangements prior to an embarking visit from a United States warship during exercise Talisman Sabre 2013. A number of lessons learned were identified by ARPANSA and provided to the Visiting Ships Panel (Nuclear) for guidance to the Queensland Government to strengthen future response arrangements.

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 within the 2006 Council of Australian Governments' *Report on the Security of Radioactive Sources*. Specifically, ARPANSA and a working group of national security experts established from the Chemical, Biological, Radiological and Nuclear Security Sub-Committee of the Australian and New Zealand Counter Terrorism Committee have finalised another recommendation of the 2006 COAG report by delivering the *Report on the Effectiveness of Radiation Detection Equipment at the Border*. This document contained a number of recommendations including enhancing information sharing capabilities between ARPANSA and the Australian Customs and Border Protection Service.

Responding to Radiological and Nuclear Threats

Radioactive material poses potential health risks if released into the environment through accidental 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.

The Accident Reporting and Guidance Operating System (ARGOS) is ARPANSA's primary atmospheric dispersion modelling and decision support software tool and has been applied to a range of radiological and nuclear release situations, including emergencies and planning. ARGOS can provide an overview of a nuclear or radiological event, create a prognosis of how the event evolves, and calculate its likely consequences. ARPANSA continues to strengthen this tool by participating in the annual ARGOS consortium and user group meetings. Participation in the ARGOS Consortium and User Group meetings and through joint international collaborations has established ARPANSA as a world leader in the application of ARGOS as a decision support tool.

ARPANSA emergency response personnel participated in an IAEA Response and Assistance Network (RANET) exercise within the Fukushima Prefecture, Japan. The exercise involved the organisation and deployment of Field Assistance Teams from several countries. ARPANSA personnel performed radiological monitoring and environmental sampling and analysis within agreed regions as part of this exercise.

The ARPANSA Incident Management Plan

ARPANSA's draft Incident Management Plan has been developed to guide staff on how to discharge their duties in an emergency, and ways to document and strengthen the strategic, operational, technical and communications elements in our response to radiological or nuclear incidents or accidents.

Nuclear warship USS Ronald Reagan visit to Brisbane

Qualitative Deliverables[1]	2011–12 Revised Budget	2012–13 Budget Target	2013–14 Forward Year 1	2014–15 Forward Year 2	2015–16 Forward Year 3
Protect the public, workers and environment from radiation exposure					
Number of security incidents involving high activity radioactive sources requiring immediate reporting[2]	<5	<2	<2	<2	<2
Result	0	0	N/A	N/A	N/A

[1] In 2012-13, all deliverables and key performance indicators have been reviewed and updated to ensure targeted performance reporting.
[2] The target has been reduced from <5 to <2 because in the last five years the Commonwealth has received notification of only two such incidents and a lower target is now appropriate.

This plan has been prepared to allow ARPANSA to provide a flexible response to radiological and nuclear incidents or emergencies. It provides for combinations of ARPANSA's technical and operational capabilities and communications assets to be activated and deployed when required, depending upon the nature of the emergency. The Incident Management Plan will ensure that ARPANSA is an effective and responsive agency during radiological or nuclear emergencies, and is ready to provide assurance and advice to the public and the Australian Government when required.

In January 2013, ARPANSA joined with its partner agencies including the Attorney-General's Department, Australian Federal Police, the Department of Health and Ageing, and states and territories to test the Incident Management Plan against a challenging scenario, and found that the plan generally achieved all its desired outcomes whilst also identifying a number of improvements which have now been adopted. In June 2013, ARPANSA conducted a Business Continuity Plan test utilising a scenario that would plausibly activate the Incident Management Plan. This scenario demonstrated that both the Incident Management Plan and Business Continuity Plan worked effectively with only minor recommendations made for potential improvement.

International Engagement (selected)

Meeting of the International Atomic Energy Agency (IAEA) Safety and Security Standards Committees Chairs, and of the Commission on Safety Standards, Vienna, 18-21 March 2013

This financial year, various meetings of the five Chairs of IAEA safety and security standards committees were held, including the IAEA

ARPANSA technical specialists participating in an IAEA workshop exercise in the evacuated zone around TEPCO's Fukushima Dai-ichi Nuclear Power Station - 29 May 2013. (Photo Credit: Susanna Lööf/IAEA.)

Qualitative Deliverable	2012–13 Reference Point or Target
Protect the Public, workers and environment from radiation exposure	
Enhanced system for response to radiological and nuclear threats and events consistent with international guidance and best practice	Documented arrangements for ARPANSA radiation emergency response in place by end of 2012
Result	*ARPANSA's Incident Management Plan was completed in 2012 and tested in conjunction with partner agencies in January 2013*

Commission on Safety Standards (with Dr Geoff Williams of ARPANSA chairing the Waste Safety Standards Committee, and the CEO of ARPANSA being a member of the Commission of Safety Standards). The meeting focused on ways for the IAEA committees to work together with a common purpose for better integrating the standards for security and safety, including exploring the possibility of producing documents combining guidance for both safety and security. Updates of current international standards under development were provided by the Chairs to the Commission of Safety Standards, including completion of the safety guide, *Near Surface Disposal of Radioactive Waste* which is of importance for Australia in light of the impending development of the National Radioactive Waste Management Facility. This guide has been endorsed by the Commission for publication.

The Commission for Safety Standards sets out the general directions of the IAEA's work on safety standards in the waste, radiation, transport and nuclear areas. Ongoing considerations relate to the integration of safety and security and the effective implementation of Safety Standards by the IAEA Member States.

IAEA Waste Safety Standards Committee

ARPANSA provides the Chair of the IAEA Waste Safety Standards Committee, which is the prime committee responsible for developing international best practice in radioactive waste safety. ARPANSA participated in both meetings of Waste Safety Standards Committee held in this financial year. In this period, the IAEA with Australian input, has updated its safety standards in many areas relevant to Australia, including *Near Surface Disposal of Radioactive Waste*, *Remediation Processes for Areas with Residual Radioactive Material* and *Decommissioning of Nuclear Facilities*.

Australia is also taking lead roles in the enhancement of international standards for nuclear and radiation safety in light of lessons learned from the Fukushima Dai-ichi nuclear accident, and in working towards the harmonisation of international standards for safety and security in the nuclear industry.

IAEA Transport Safety Standards Committee

The Australian representative from ARPANSA attended the meetings of IAEA Transport Safety Standards held during this year. The meetings discussed the issues to be considered in the review of IAEA Safety Standards in response to the Fukushima Dai-ichi nuclear accident.

Of note to Australia, were publications of the IAEA *Regulations for the Safe Transport of Radioactive Material* (TS-R-1/SSR-6), and finalisation of the Advisory Material for the IAEA *Regulations for the Safe Transport of Radioactive Material* (SSG-26).

The meetings resolved the key issues related to development of Transport Safety documents including *Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material*, (TS-G 1.2), and Schedules of Provisions of the IAEA *Regulations for the Safe Transport of Radioactive Material (2012 Edition)*, TS-G 1.6, and in harmonisation of the requirements of the 2012 edition of *Transport Regulation with UN Model Regulations*.

ARPANSA is in the process of adopting the IAEA *Regulations for the Safe Transport of Radioactive Material*, SSR-6, into its *Code of Practice for Safe Transport of Radioactive Material* and the corresponding safety guides.

Promote the Effective Use of Ionising Radiation in Medicine

ARPANSA continues to promote the safe and effective use of ionising radiation in diagnostic imaging by conducting dose surveys resulting in the establishment of Diagnostic Reference Levels (DRLs). These data provide the baseline for the optimisation of dose management. These data also allow Australian doses to be compared with those of other countries and for the setting of national DRLs. During the year, ARPANSA compared the primary standard of absorbed dose in ARPANSA's medical standards linac against measurements made by the international standards laboratory, the Bureau International des Poids et Mesures. The agreement achieved in the Intercomparison fulfilled the final hurdle before the introduction of a new service for calibration of radiotherapy linac beams against similar beams using ARPANSA's medical standards linac. The Australian Clinical Dosimetry Service (ACDS) also continued to improve radiation oncology safety through implementation of its three level audit program with results published and presented locally and internationally.

Diagnostic Imaging and Nuclear Medicine

Of more than 15 000 000 procedures involving ionising radiation that Australians undergo each year, most 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. ARPANSA has a responsibility to estimate the radiation doses to the Australian population from radiological procedures. Evaluation of these doses provides the baseline which is used for optimisation of dose management. The data also allow Australian doses to be compared with those of other countries and for the setting of national diagnostic reference levels (DRLs). The latter are used as indicative benchmarks for comparative radiological practices. Computed tomography (CT) procedures have become the dominant contributor to the radiation dose to the Australian population from diagnostic radiology. This has come about both because of the increasing number of procedures and the increasing complexity and capacity afforded by modern technology.

Optimisation of Radiation Protection of Patients

The Diagnostic Reference Level Survey for computed tomography is continuing. Comparison of data collected in 2011 against 2012 data shows a strong consistency. The National Diagnostic Reference Level Database is gradually being populated with practice data. There are approximately 180 (22%) of national computed tomography practices registered with over 1800 surveys completed since August 2011. New surveys are being developed to cover the areas of interventional radiology and nuclear medicine. A liaison panel has been established for diagnostic reference level surveys in nuclear medicine. The panel has met and initial work is continuing on survey structure and metrics to be used for practice assessment. An expert group of medical physicists has been working on the survey structure and dose metrics for the diagnostic reference level surveys in interventional radiology. The first draft survey has been initiated to test the proposed methodology. Presentations and publications have been delivered to distribute DRL information to the relevant stakeholder and professional groups.

The Primary Standard for Absorbed Dose

The primary standard of absorbed dose was implemented on ARPANSA's medical standards linac. The absorbed dose in the linac beams was compared against measurements made by the international standards laboratory, the Bureau International des Poids et Mesures, with acceptable agreement. Secondary comparisons were made with Canada and Japan with similar results. ARPANSA now offers a calibration service for three megavoltage photon beams allowing calibrations to be performed directly for the beams being used rather than indirectly using ARPANSA's cobalt-60 gamma ray source. The primary standard continues to be used to determine the absorbed dose to water from the cobalt-60 gamma ray source. This source was used to provide traceable calibrations to fifteen radiotherapy facilities in Australia. This number is consistent with the target of calibrating every facility once every three years.

ACDS team developing a Level I - Optically Stimulated Luminescence Detector audit

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 implemented a three level audit program, with each succeeding level having a more complex and challenging geometry. This service 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 2012–13 financial year. The ACDS has achieved complete signup to its voluntary audit program from centres nationally and has requests for audits extending into the 2013–14 financial year. 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 acknowledge that the ACDS can deliver a valuable program for radiation therapy in Australia.

Oversight of the ACDS is mandated through a Memorandum of Understanding between ARPANSA and the Department of Health. The Memorandum of Understanding requires that ARPANSA report to the Department, the auditing requirements, milestones required for on-going funding, and the formation of a Clinical Advisory Group. The Clinical Advisory Group provides expert opinion to the ACDS and reviews the audit development. The Memorandum of Understanding requires the ACDS to hold Clinical Advisory Group meetings four times a year and this has occurred. The ACDS is currently under review by the Department of Health to determine the need and extent of future audits with the review expected to be completed by September 2013. Since its inception, the ACDS has performed Level I basic reference Dosimetry audits on 119 linacs and 20 higher accuracy level Ib audits on newly installed linacs, level II audits on 33 linacs and level III audits on 37 linacs. All the audits have been performed voluntarily at the request of radiotherapy providers. Counting all the audits performed throughout Australia, 80% of the radiotherapy facilities have had at least one linac audited, equating to more

Quantitative Deliverables[1]	2011–12 Revised Budget	2012–13 Budget Target	2013–14 Forward Year 1
Promote the effective use of ionising radiation in medicine			
Cumulative proportion of centres audited by the Australian Clinical Dosimetry Service for accuracy in dose measurement of radiotherapy[2]	50%	80%	90%
Result	50%	80%	N/A

[1] In 2012-13, all deliverables and key performance indicators have been reviewed and updated to ensure targeted performance reporting.
[2] This program is operating on a trial basis and is funded until June 2014 when it will be reviewed and its future determined.

Quantitative Indicator	2012–13 Reference Point or Target
Promote the effective use of ionising radiation in medicine	
Establish Diagnostic Reference Levels as tools for quality improvement in diagnostic radiology	Improved diagnostic practice using lower dose levels.
Result	*The Diagnostic Reference Level project has successfully raised the profile of radiation exposure of the patient within the radiological community. ARPANSA is seen as an important resource in this area. On-going analysis of CT DRL data indicates that patient doses remain at similar levels. International experience demonstrates that patient dose decreases after implementation of DRLs and recently published Australian DRLS will most likely follow international trends and show decreased doses.*

than three quarters of all the linear accelerators in Australia. Following two years of 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 Radiologists, the Australian Institute of Radiography and the Australasian 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 during local audit visits. In total, the ACDS has formally presented eight times at national and international fora over the reporting period.

External auditing for radiotherapy represented in the work of the ACDS is recommended internationally to ensure patient safety and to ensure the accurate delivery of the appropriate dose to the desired identified anatomy. The ACDS delivers a valuable program for radiation therapy in Australia.

The Australian Synchrotron

This financial year, several members of Medical Radiation Services Branch were invited to the Australian Synchrotron in Clayton to assist the Imaging and Medical Beam Line group over a two day period in measuring the dose rate from their intense synchrotron x-ray beam. Credible dosimetry is required for establishing the Imaging and Medical Beam Line for imaging and radiotherapy applications.

ARPANSA maintains significant expertise in this area and will continue the collaboration with the Imaging and Medical Beamline team on further projects.

International Engagement (selected)

In early October 2012, ARPANSA attended an IAEA Technical Meeting: The new dose limit for the lens of the eye – implications and implementation, held in Vienna, Austria which discussed guidance on implementing the requirement for the new dose limit as a basis for future guidance to be provided to Member States. ARPANSA will use guidance from this meeting to incorporate these benchmarks into the appropriate ARPANSA Safety Guides for Radiation Safety in the Medical Uses of Ionising Radiation.

In October 2012, ARPANSA attended the Second Research Coordinators Meeting for the IAEA Coordinated Research *Project E2.10.08 'Development of Advanced Dosimetry Techniques for Diagnostic and Interventional Radiology'*, held in Vienna, Austria. At this meeting, ARPANSA staff lead groups in both CT and skin dose dosimetry and attendance at this type of fora helps ARPANSA develop better dosimetry tools and assessment methods.

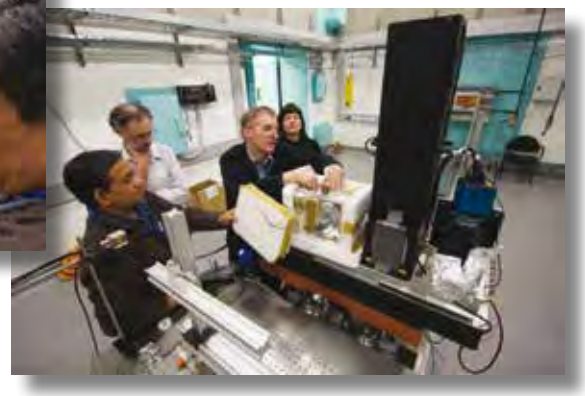
Medical Radiation staff attended the Asia Pacific Metrology Program Technical Committee for Ionizing Radiation which met in Wellington, between 25-30 November 2012 and the

ARPANSA scientist observing delivery of the synchrotron beam to the IMBL measurement room

International Consultative Committee on Ionizing Radiation which met in Paris, between 25-28 March 2013. Both of these were significant international meetings concerning the dosimetry of ionising radiation and the equivalence of dose measurements between countries. At these meetings, ARPANSA presented results from international comparisons of absorbed dose and air kerma, and took part in discussions concerning technical issues in dosimetry and the organisation of future comparisons.

Between 26-28 March 2013, ARPANSA's medical radiation staff attended the Bureau International des Poids et Mesures Comité Consultatif pour les Rayonnements Ionisants Section I (X and gamma rays, charged particles) in Paris, France where representatives of primary standards laboratories from around the world met to discuss strategic and technical issues related to the measurement of ionising radiation. Of primary concern to Australia is the direct measurement of absorbed dose in linear accelerator beams used for radiotherapy. Key outcomes from this trip included preliminary results for the current international comparison of linear accelerator absorbed dose, and the establishment of a reference value for this comparison. The future work program of international comparisons was also decided.

ARPANSA also participated in the initial consultation of the Diagnostic Radiology and Interventional Procedures drafting group on the *Safety Guide (DS399) on Radiation Safety in Medical Uses of Ionizing Radiation* and ARPANSA was selected to lead the editorial group drafting the diagnostic



Staff from ARPANSA's Medical Radiation Services Branch at the Australian Synchrotron in Clayton, Melbourne at work positioning the graphite calorimeter inside a polystyrene box for thermal insulation

imaging module. Members of ARPANSA's medical radiation team have also been appointed as Chair of the UNSCEAR Expert Group on Medical Exposure.

Between 26 February to 1 March 2013, ARPANSA attended the 25th Annual Scientific Meeting of the Trans-Tasman Radiation Oncology Group, held in Wellington, New Zealand which focused on the development of clinical trials and included a technical workshop. The meeting provided an overview and update on the developments in radiation oncology in Australia and New Zealand and an opportunity to discuss the work of ARPANSA's ACDS with colleagues of all three specialities: radiation oncologists, medical physicists and radiation therapists.

Between 15-21 June 2013, the ACDS Director attended the American Association of Physicists in Medicine Summer School (Colorado Springs, United States) which presented on a number of different approaches to both quality control and fault finding in the clinical environment and also engineering-based process control techniques. This attendance provided ARPANSA with valuable tools to investigate the stability of some of our quality assurance routines and useful information about our techniques and what limit values should be applied to ACDS equipment. During this same visit, ARPANSA attended the MD Anderson Cancer Center Secondary Standards Laboratory and Radiological Physics Centre, in Houston, Texas where a cross-calibration of an ARPANSA ionisation chamber was performed by the Cancer Center's secondary standard dosimetry laboratory (SSDL). The cross-calibration performed by the SSDL was particularly important for ARPANSA's Radiotherapy Section as it assists with resolving an identified difference between measurements performed in North America and Australasia. ARPANSA also visited the Radiological Physics Centre in Houston which is the US-equivalent to the ACDS and has been operating for more than fifty years. This visit was very useful for the ACDS to help guide its development over the next few years and in particular in the logistics of large audits as the complexity and technologies of the ACDS evolves to meet the needs of its users.

Ensure Effective Regulation and Enforcement Activities

During this financial year, ARPANSA's licensing and compliance workload has been dominated by the assessment of major licence applications for new ANSTO facilities including the Interim Waste Store facility, an expanded Molybdenum-99 manufacturing facility and waste treatment facility using ANSTO's Synroc technology.

ARPANSA continued to implement a graded approach to compliance with an increased focus on holistic assessment practices of our licence holders. Our Safety Analysis Section has been asked to contribute to IAEA activities in holistic safety.

ARPANSA has increased the amount of guidance information on its website with a view to improving the capability of our licence holders' implementation of radiation safety measures. ARPANSA's licence holders have also responded favourably to our increased transparency in publishing inspection reports on the ARPANSA website.

Emergency Preparedness and Response

ARPANSA strives to achieve international best practice with regard to nuclear and radiological security, and emergency preparedness and response. This financial year, ARPANSA continued its work with the Australian Safeguards and Non-Proliferation Office (ASNO) through the joint Physical Protection and Security Working Group (PPSWG) on a number of activities relating to the improvement of nuclear security for Australia. This work included the development and formulation of the *National Design Basis Threat* issued to ANSTO by ASNO in 2012. Other PPSWG activities included conducting a number of joint security inspections of ANSTO's research reactor, developing guidance for the periodic security review at ANSTO and jointly reviewing risk assessment documentation for the proposed molybdenum-99 production facility.

ARPANSA, in cooperation with the Attorney-General's Protective Security Training College, developed the National Radiation Security Advisor Accreditation Scheme and the supporting Nationally Recognised Training Qualification through Australian Skills Quality Australia. This qualification was designed to ensure that all jurisdictions within Australia have access to a pool of qualified accredited radiation security advisors who may assist in the formulation and endorsement of facility and transport security plans that use security enhanced radioactive sources. ARPANSA is currently working with state and territory radiation regulators to develop the pool of accredited assessors.

ARPANSA's Security and Community Safety team has reviewed a number of radioactive source security plans, including for transport and will continue to engage with Australian Government licence holders to ensure that international best practice is maintained at these facilities.

In conjunction with the Australian Government Crisis Coordination Centre, ARPANSA along with representatives from state and territory law enforcement organisations, emergency first response agencies, Australian Government organisations and radiation regulators, conducted a national radiation emergency response table top exercise designed to strengthen the ARPANSA Incident Management Plan and Australia's national arrangements. ARPANSA, as the IAEA-designated National Competent Authority for radiation incidents, is expected to regularly exercise response plans, and these activities build on the body of expertise and experience gained through our key role in advising the Australian Government and the public during the Fukushima accident.

ARPANSA also participated in the Attorney-General's Exercise Baryon series, part of the National Counter-Terrorism Committee's exercise portfolio, which focused on a security incident occurring at ANSTO's nuclear facilities. This multi-organisational response exercise highlighted the experience and maturity of Australian arrangements when coordinating state and federal resources to resolve a security incident.

A member of the Emergency Response Group at ARPANSA attended the IAEA Workshop on Notification, Reporting and Requesting Assistance held in Singapore. Australia is party to two IAEA conventions, the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*. ARPANSA is the designated Australian National Competent Authority both domestic and abroad for these conventions. The workshop reinforced ARPANSA's understanding

of the obligations under these two conventions for Australia and informed participants on communication protocols with the IAEA Incident and Emergency Centre.

Major Licensing Activities

Compliance with Commonwealth legislative and regulatory infrastructure is 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 culture that effectively provides reassurance that activities carried out under a licence from ARPANSA will not be harmful to people or the environment.

The Australian Synchrotron

In December 2012, ARPANSA issued a facility licence to ANSTO to operate the Australian Synchrotron at Clayton in Victoria. The Australian Synchrotron radiation facility is a source of highly intense light ranging from infrared to hard x-rays used for a wide variety of research purposes and is located near the Monash University, Clayton Campus. The Australian Synchrotron uses particle accelerators to produce a beam of high energy electrons which are placed within a storage ring that circulates the electrons to create synchrotron light. The light is directed down separate beamlines at the end of which may be placed a variety of experimental equipment contained within the endstations. Synchrotron light is filtered and adjusted to travel into experimental workstations, where the light reveals intricate detail about the molecular structure of a variety of materials.

A licence condition was imposed on ANSTO to provide a progress report by 30 April 2013 or within such time as determined by the CEO of ARPANSA, on Plans and Arrangements for operating the Synchrotron and production of the Safety Analysis Report with Operating Limits and Conditions. A final report has been requested by 30 September 2013 at the latest or within such time as determined by the CEO of ARPANSA, after which the CEO will reassess the conditions for operations.

ANSTO's Application for the Interim Storage of Returned Radioactive Waste

On 1 May 2012, ANSTO announced its intention to site and construct an interim intermediate level radioactive waste storage facility (Interim Waste Store or IWS Facility) at Lucas Heights Science and Technology Centre, Sydney, New South Wales. On 26 September 2012, ARPANSA received a licence application from ANSTO to site and construct the Interim Waste Store. ARPANSA's CEO is required to assess the application under the ARPANS Act and decide whether or not a licence should be granted.

The purpose of the ANSTO IWS is to safely store intermediate level waste from reprocessing of HIFAR spent fuel which is due to return to Australia from France in December 2015. The waste is intended to be stored at Lucas Heights Science and Technology Centre until the National Radioactive Waste Management Facility (NRWMF) becomes available. Intermediate level waste from reprocessing of HIFAR spent fuel is also due to return to Australia from the United Kingdom in approximately 2020 which may also need to be stored at the ANSTO IWS if the NRWMF is not operational at that time.

In January 2013, ANSTO resubmitted their applications for siting and construction of the IWS Facility following requests from ARPANSA for more information, including details on the full and proposed uses of the facility. Amended siting and construction applications for the IWS were then submitted by ANSTO in mid-April 2013. The proposal for the Interim Waste Store was also referred to the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) for assessment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EBPC Act). DSWEWPaC determined that no environmental assessment is required for this facility under the EBPC Act.

Details of the DSEWPaC decision can be found on their website at: www.environment.gov.au.

Licence Application for ANSTO Nuclear Medicine Molybdenum-99 Facility (ANM Mo99)

In May 2012, ANSTO submitted an application (Number A0270) to prepare a site for the proposed Australian Nuclear Medicine Molybdenum-99 Facility at the Lucas Heights Science and Technology Centre. The proposed facility will be for the production of Molybdenum-99 to be used in nuclear medicine. The CEO of ARPANSA also intends making a decision on an associated prescribed radiation facility application for the ANSTO SyMo Facility.

In accordance with Regulation 40 of the ARPANS Regulations, the CEO of ARPANSA invited submissions about the applications. The CEO will take all submissions into account before making a decision on whether or not to grant the facility licences. On 16 May 2013, ARPANSA held a community information session to advise on these upcoming licence applications and any likely ramifications for the local community. Public consultations on these licence applications closed on 12 June 2013. Both of these licence applications are currently being considered by ARPANSA and are expected to be finalised before the end of 2013.

Inspections

During this financial year ARPANSA undertook a planned inspection program of sources, prescribed radiation facilities and nuclear installations operated by licence holders in order to monitor compliance with the ARPANS Act and the ARPANS Regulations.

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.

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

Other Significant Activities in Relation to Regulatory Oversight

- In August 2012, ARPANSA approved ANSTO's application under Regulation 51 of the ARPANS Regulations to operate the Radiochemical Laboratories at the Camperdown Facility. ANSTO provided an initial report confirming that the design and safety objectives for the Radiochemical Laboratory including the shielding adequacy would be met and that details would be included in ANSTO's Safety Analysis report.
- Approval was granted by ARPANSA and an amended licence was issued to the ANSTO Bragg Institute to operate the SIKA cold triple axis neutron spectrometer up to and including involving opening the instrument to the neutron beam.
- On 19 August 2012, ARPANSA consented to the surrender of the facility licence for the construction of the ANSTO Camperdown facility.
- On 12 September 2012, ARPANSA consented to the surrender of the facility licence for decommissioning of the National Medical Cyclotron at Camperdown.
- On 14 December 2012, ARPANSA assisted the Australian Transport Safety Bureau by recovering and making safe radiological material from its Canberra Offices which were gathered as evidence from an aviation accident investigation in Queensland.
- On 1 March 2013, ARPANSA revised the ANSTO Waste Operations and ANSTO Fuel Operations licences and a revised amalgamated licence for ANSTO Waste Operations (F0260) covering both facilities has been issued.
- During this financial year, ARPANSA continued its periodic review of all source and facility licences which is required at three-yearly intervals under the Regulatory Services Quality Management System.

Breaches

Breaches with safety implications

The Australian Defence Force was in breach of s30(1) of the ARPANS Act for possession of a linear accelerator for industrial radiography at Port Wakefield without the appropriate facility licence. A licence application was subsequently submitted by Defence and approved by ARPANSA. The unauthorised possession was determined to be an administrative error and, no enforcement action was taken.

Quantitative Deliverables	2011–12 Revised Budget	2012–13 Budget Target	2013–14 Forward Year 1	2014–15 Forward Year 2	2015–16 Forward Year 3
Ensure effective regulation and enforcement activities					
Number of inspections of organisations holding a Commonwealth licence	60	60	60	60	60
Result	62	59	N/A	N/A	N/A

The Australian Defence Force was in Breach of s31(2) of the Act by failing to follow licence conditions in the unauthorised disposal of 87 items of controlled apparatus and controlled material. Following advice from ARPANSA, Defence has taken measures to prevent the reoccurrence of such unauthorised disposals. ARPANSA determined that the disposals were of low safety significance and, no enforcement action was taken by ARPANSA.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) - Ecosystem Sciences was found to be in breach of s31(2) of the ARPANS Act in that personal monitoring devices had not been collected and promptly submitted for assessment. Following advice from ARPANSA, the licence holder took appropriate corrective actions and no enforcement action was taken by ARPANSA.

CSIRO Ecosystem Sciences was found to have breached s31(2) of the ARPANS Act by having sealed source assemblies used in portable gauges not locked in the shielded position whilst in storage or during transport. Following advice from ARPANSA, the licence holder took appropriate actions and as no radiological consequences were associated with the breach, no enforcement action was taken by ARPANSA.

ANSTO was found to have breached Licence Condition 6 of Schedule 2 of Licence F0240 for the Gamma Irradiator Suite through its failure to calibrate the area radiation monitor at the required interval. Following advice from ARPANSA, ANSTO recalibrated the area monitor and actions put in place to prevent recurrence. No enforcement action was taken by ARPANSA.

Breaches with no or minor safety implications

During this financial year, breaches with minor or no safety implications were recorded across the following areas:

- late submission of annual report
- failure to keep source inventory workbook updated
- marginally exceeding activity limit for a building
- disposal of a low hazard UV controlled apparatus without prior approval
- disposal of a low hazard x-ray apparatus without prior approval
- failure to implement a radiation management plan
- lack of facility specific emergency procedures, relying on site emergency procedures
- failure to notify ARPANSA of a source transfer within a given time period.

In all of the above cases, the breach was assessed to have minor safety implications, corrective actions were implemented by the licence holder and no enforcement action was considered necessary.

During this financial year, fifty-nine inspections were performed out of a target of sixty.

ARPANSA is committed to carrying out its regulatory functions in a responsive and timely manner. In relation to timeliness of assessing licence applications, we advise that in relation to source licences we achieved an average completion time of 17.3 days against a target of 30 days, in relation to facility licences we achieved an average completion time of 59.5 days against a target of 60 days, and in relation to regulation 51 approvals we achieved an average completion time of 17.6 days against a target of 30 days.

National Uniformity

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

Quantitative Deliverables[1]	2011-12 Revised Budget	2012-13 Budget Target	2013-14 Forward Year 1	2014-15 Forward Year 2	2015-16 Forward Year 3
Ensure effective regulation and enforcement activities					
Number of safety incidents involving Commonwealth users of radiation[2]	<40	<10	<10	<10	<10
Result	5	6	N/A	N/A	N/A

[1] In 2012-13, all deliverables and key performance indicators have been reviewed and updated to ensure targeted performance reporting.
[2] The target has been reduced from <20 to <10 due to recent trends in the number of incidents

ARPANSA and the state and territory radiation regulators through the Radiation Health Committee (RHC). 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 Agency's national uniformity activities have been dominated by resolving long running discussions relating to Extremely Low Frequency (ELF) radiation exposure, commercial solaria and associated UV hazards and creating a uniform approach to disposal of very low level waste material by the user.

During this financial year, the draft NDRP Amendment No. 6 was released for public consultation, further developed and forwarded through the relevant approval processes. This amendment covered various topics including exemptions of krypton-85 lighting products; additional licensing pathways for chiropractors; clarifying incident reporting requirements and other matters.

NDRP Amendment 6 included a restructure of the wording of schedule 13 to clarify the scope of incidents to be reported, provided exemptions for certain lighting products, supplemented the authorisation criteria for chiropractors and updated the reference to the transport code RPS 2. The final version was prepared after detailed consideration by the Radiation Health Committee taking into account public submissions received. A preliminary regulatory assessment report relating to this draft amendment was approved by the Office of Best Practice Regulation and submission of the amendment to the Standing Council on Health for out-of-session consideration has been approved. Once the amendment is approved at Ministerial level, a revised NDRP will be published in early 2013–14.

Work has begun on several other proposed NDRP amendments covering a range of topics.

The *Safety Guide for the Approval Processes for the Safe Transport of Radioactive Materials* (RPS 2.2) was published as a supplementary guide to the Transport Code. This document provides practical advice and guidance on approval processes for the transport of radioactive material.

The main achievement of the Radiation Health Committee work program this year has been the advancement of the work on the revision of RPS 1 (*Recommendations for Limiting Exposure to Ionizing Radiation and National Standard for Limiting Occupational Exposure to Ionizing Radiation*) to create two new documents. The *Fundamentals for Protection against Ionising Radiation* will be the top level document replacing the Recommendations part of RPS 1 and the Code *of Practice for Radiation Protection in Planned Exposure Situations For Occupational and Public Exposure* will replace the Standard part of RPS1.

The draft Fundamentals was released for public consultation in June 2013 and drafting of the Code is at an advanced stage, with consultation and regulatory impact assessment due to start in late 2013.

International Engagement (selected)

In February 2013, ARPANSA's Dr Geoff Williams chaired an IAEA Consultancy meeting held in Vienna Austria which explored management of post-accident remediation following a nuclear accident. This work was based on past experience of different approaches: in the Ukraine (Chernobyl); the United States (Hanford) and in Australia (Maralinga rehabilitation). The scope of this consultancy was to draft guidance on the management and disposal of large amounts of waste arising after the ending of an emergency phase of a nuclear/radiological disaster.

Between 20-22 February 2013, ARPANSA attended the IAEA - Regional Workshop on Effective Border Control Coordination in Asia Pacific and Middle East Countries, held in Manila, the Philippines which discussed best practice and lessons learned in implementing effective border control of radioactive materials. The discussions also considered best practice by border control agencies and how to improve information sharing with regulatory bodies to ensure an integrated and harmonised approach to resolve incidents at the border.

Between 13-14 March, senior staff attended the 46th meeting of the Organisation for Economic Cooperation and Development-Nuclear Energy Agency (OECD-NEA) – Radioactive Waste Management Committee and Regulators' Forum, held in Paris, France as well as a Regulator's Forum on 12 March 2013. Of particular interest to Australia was the presentation of the outcomes of a peer review of a licence application for a near surface disposal facility at Dessel in Belgium. In addition, the results of

a peer review of the post-closure radiological safety case for a spent fuel repository in Sweden were presented. In both cases, it was concluded that the international peer review processes added value to licence application assessments.

Between 12-15 March 2013, a senior member of Regulatory Services Branch attended a Consultancy Meeting to Assist in Planning the IAEA International Experts Meeting (IEM-5) on Human and Organisational Consultancy Meeting on Factors in Nuclear Safety in the Light of the Accident at the Fukushima Dai-ichi Nuclear Power Plant, held in Vienna, Austria. Holistic safety is a best practice approach to nuclear safety management that includes technological, human, and organisational aspects and the often complex interaction and interdependence between these three aspects. ARPANSA's invitation to participate in the consultancy group demonstrates the IAEA's recognition of ARPANSA's best practice approach in developing methods to promote and assess safety holistically.

During December 2013, ARPANSA, as an IAEA-designated National Competent Authority, attended the IAEA Workshop on Notification, Reporting and Requesting Assistance held in Singapore. Australia is party to the *Convention on Early Notification of a Nuclear Accident* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*. This workshop reinforced ARPANSA's obligations under both conventions and informed participants on communication protocols with the IAEA Incident and Emergency Centre.

Discussion and Analysis of Financial Performance

Report on Performance

For the financial year ending 30 June 2013, ARPANSA reported an operating deficit of $2.29m. This deficit is attributed to $2.33m depreciation and amortisation expense not requiring appropriation.

Revenue for the year totalled $25.1m, of which 54% was appropriated by government. The remaining amounts related to regulatory licence fees and charges and from the sale of goods and services.

ARPANSA's expenses totalled $27.4m. Approximately 63% are attributed to employee benefits, 9% relates to depreciation and amortisation expense and the remainder suppliers expense.

The Agency continues to review the efficiency and effectiveness by which it delivers its program, to ensure we operate within our financial constraints.

Performance Against 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.

Table 1 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* 2012–13 $'000 (a)**	**Actual Expenses 2012–13 $'000 (b)**	**Variation $'000 (a)-(b)**
Program 1.1: (Radiation protection and nuclear safety)			
Departmental expenses			
Ordinary annual services (Appropriation Bill No. 1)	13,498	13,498	
Special Accounts	8,613	11,573	(2,960)
Expenses not requiring appropriation in the Budget year	2,171	2,330	(159)
Subtotal for Program 1.1	24,282	27,401	(3,119)
Total for Outcome	24,282	27,401	(3,119)
Average staffing level (FTE)	152	145	

* Full year budget, including any subsequent adjustment made to the 2012-13 Budget.

Client complaints

As part of the quality management system of ARPANSA and services accredited by the National Association of Testing Authorities (NATA), 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.

Table 2: ARPANSA Resource Statement – 2012–13

	Actual Available Appropriation for 2012–13 $'000 (a)	Payments Made 2012–13 $'000 (b)	Balance Remaining 2012–13 $'000 (a-b)
Ordinary Annual Services[1]			
Prior year departmental appropriation[2]	580	580	
Departmental appropriation[3]	15 434	13 498	1 936
Total	16 014	14,078	1 936
Total ordinary annual services	16 014	14 078	
Other services[4]			
Departmental non-operating			
Equity injections	-	-	-
Total	-	-	-
Total other services	-	-	-
Special Accounts[5]			
Opening balance	1 656		
Appropriation receipts[6]	14 928		
Non-appropriation receipts to Special Accounts	11 945		
Payments made		27 529	
Total Special Account	28 529	27 529	1 000
Total resourcing and payments	44 543	41 607	
Less departmental appropriations and equity injections drawn from the above and credited to special accounts	(14 928)	(14 078)	
Total net resourcing for ARPANSA	29 615	27 529	

[1] Appropriation Bill (No.1) 2012-13.
[2] Balance carried from previous year for annual appropriations.
[3] Includes an amount of $1.936 million in 2012-13 for the Administered Capital Budget. For accounting purposes this amount has been designated as 'contributions by owners'.
[4] Appropriation Bill (No.2) 2012-13.
[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 2012-13 included above.

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).

During the 2012–13 financial year, the CEO reported to the Parliamentary Secretary to the Minister for Health and Ageing and administered 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 executives allocated the resource budget, made strategic decisions and set key priorities through the Strategic Management Committee. The members comprised the CEO, ARPANSA Branch and Office Heads and an external member from the Bureau of Meteorology.

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

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

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 (CEIs), 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.

Strategic Management Committee

The Strategic Management Committee (SMC) is an administrative body established by the CEO to provide advice to the CEO and leadership to staff within ARPANSA. The SMC assists the CEO by:

- advising on corporate governance responsibilities in ARPANSA, including in relation to the approval of :
  - » the Agency's strategic plan and annual business plans
  - » the Agency's annual budget and five year rolling plan for capital expenditure
  - » internal policy making
- ensuring that the Agency has:
  - » adequate reporting systems at a strategic level
  - » a robust control environment in place (both operational and financial)
  - » an appropriate risk management framework
  - » good management practices and the highest standards of financial and ethical behaviour
  - » clearly defined delegations of authority across the Agency
- monitoring
  - » progress against the budget and business plans
  - » the progress of major capital expenditure
  - » the progress of major projects
  - » issues arising from meetings of formally established management and governance committees.

In its deliberations, vigorous and informed discussion of the issues by SMC members is not only encouraged, but expected. The primary role of the external members is to challenge organisational attitudes and approaches, as well as to enhance the range of skills and experience of the SMC. Membership of the SMC includes:

- CEO (Chair)
- Branch and Office Heads
- Chief Financial Officer
- General Counsel
- one or more external members appointed by the CEO.

Audit and Risk Committee

The ARPANSA's Audit and Risk Committee comprised an independent chair, two senior managers from within ARPANSA and an external member. The General Counsel served as secretary to the Committee. Representatives of the Australian National Audit Office (ANAO) 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 *Financial Management and Accountability Act*.

The Audit and Risk Committee met four times in 2012–13 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 ANAO provided external audit services through PriceWaterhouse Coopers. Oakton Services Pty Ltd provided internal audit services.

Information Management Steering Committee

The Information Management Steering Committee meets bi-monthly and is chaired by the Section Manager of the Australian Clinical Dosimetry Service (ACDS). 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 information management and information and communication technology (ICT) policies
- assesses, monitors and manages ICT risks
- fosters the development of ICT skills and capabilities.

Work Health and Safety Committee

The Work Health and Safety (WH&S) Committee is chaired by the CEO, assisted by the ARPANSA WH&S Co-ordinator, and comprises staff Health and Safety Representatives from across both the Yallambie and Miranda premises, and management representatives. The WH&S 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 Work Health & Safety Management System. During the year the WH&S Committee conducted a number of WH&S work area inspections. Further information in respect of Work Health & Safety arrangements within the Agency is described in Appendix 2.

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 WH&S 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 priority areas the Agency intends to focus on during the coming year and beyond.

The Strategic Directions are supported by Corporate and Section 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, security, fraud control, compliance, business continuity, quality and information management.

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 methodology for annual compliance sign-off and developed a risked based compliance assessment questionnaire to guide management in their review. The annual Compliance Self Assessment 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. The Quality Management Committee, which comprises the CEO, Branch and Office Heads and the Quality Manager, acts under the auspices of the Strategic Management Committee Charter, meets quarterly to review reports from the branch quality meetings. The Quality Management Committee 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 the ISO 9000 series of documents and ISO 17025.

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

As required by the Quality Standard, AS ISO/IEC 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 & Risk Committee and monitored by the Strategic Management Committee.

Internal Audit

Oakton Services Pty Ltd has been ARPANSA's internal auditors since November 2008. Significant internal audits conducted in 2012–13 included reviews of:

- FMA Act Compliance
- Fraud Control
- IT Security.

Business Continuity

A major review of the *ARPANSA Business Continuity Plan* was commenced during 2012–13 and is currently being aligned with the *Incident Management Plan* which is being developed building on the lessons learned during ARPANSA's response to the Fukushima Dai-ichi nuclear 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 to 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 2013.

Ethical Standards

All ARPANSA staff must adhere to the *Australian Public Service Values* and *Code of Conduct* under the *Public Service Act 1999*. 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 8 of this Report.

Judicial Decisions and Decisions of Administrative Tribunals

There have been no judicial decisions and decisions of administrative tribunals during 2012–13 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 2012–13.

Management of Human Resources

Effectiveness in Managing and Developing Human Resources to Achieve Agency Objectives

During 2012–13, ARPANSA continued its strategic focus on optimising the performance, development and placement of its people through building clear linkages between Agency priorities and workforce needs and identified organisational capability.

The strategy is aligned to *ARPANSA's Strategic Directions 2012–2016* and APS best-practice initiatives contained in *Ahead of the Game: Blueprint for the Reform of Australian Government Administration*.

Organisational Capability

ARPANSA's organisational capability is built around the skills and capacities of its staff and involves the Agency's systems, structures, processes, governance and culture; and how resources are utilised to address evolving priorities by building capacity to ensure ARPANSA can adapt to its changing environment.

During 2012–13, ARPANSA initiated a number measures aimed at improving the operational and strategic capability of the Agency. These included:

Pulse-check Review

In August 2012, ARPANSA undertook a pulse-check review to assess the quality of its leadership, strategy, delivery of services and whether it had the overall organisational capability to deliver its mission and mandate. The review methodology was largely based on the Australian Public Service Commission's Capability Review model and was structured to evaluate the effectiveness of the ARPANSA reform and restructure process which was implemented in May 2011.

Environmental Scan of Miranda Office

Having regard to the findings of successive staff surveys, ARPANSA engaged CPM Reviews to conduct an environmental scan (review) of the organisational health of its Miranda office and, more broadly, the Agency's Regulatory Services Branch during February 2013. The findings of the review process have resulted in the development of tailored strategies, procedures and workplace enhancements aimed at benefiting Miranda based employees and more specifically the Agency's Regulatory Services staff.

Realignment of Structure and Staffing

In May 2013, ARPANSA's Strategic Management Committee implemented a program aimed at realigning the Agency's structure and staffing. One of the key drivers of the realignment process was to ensure consistency with ARPANSA's *Strategic Directions 2012-2016* and confirm that the organisation was more proactive and customer-focused as well as better engaged with society in general in order to meet the Agency's future needs.

Broad-banded Classification Structure

As provided for in ARPANSA's 2011–14 enterprise agreement, the Agency committed to a review of the viability of introducing broad-banded classifications to assess whether such structures would enhance the organisational efficiency of the Agency.

In the event and following a detailed review by an external consultancy firm, it was concluded that broad-banded classifications would not enhance the effectiveness and/or efficiency of the Agency.

People Management

During the reporting period, ARPANSA again placed a strong emphasis on strategic people management issues with a particular accent on human resources, workforce planning, learning and development and information management/communications. Through the Strategic Management Committee, ARPANSA recognised the importance of key human resources strategies with the engagement of a Human Capital Management officer.

ARPANSA's workforce is its greatest asset. Highly qualified and dedicated employees are the foundation of all that ARPANSA delivers. Workforce planning activities are undertaken to ensure the Agency has the necessary skills and abilities needed to deliver essential services, and to retain existing staff by equipping them with the skills and knowledge necessary to carry out their duties while they grow and progress in their careers.

During 2012–13, 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, this has presented ARPANSA with a major challenge which it will face over the next decade 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.

Alumni Program

In order to help address this challenge, ARPANSA has expanded its Alumni program to retain the experience embedded in its older workers. The program will allow long serving employees seeking to retire from the Agency the option of taking up a part-time role usually in a training and advisory capacity. This process provides a good flexible method of transitioning older staff from the workforce to retirement.

Information and Communications Technology Workforce Plan

During 2012–13 ARPANSA reviewed its Information and Communications Technology workforce plan. The plan received positive feedback from the Australian Public Service Commission and further work is currently proceeding on developing a whole of Agency workforce planning framework.

Executive Recruitment

During 2012–13, ARPANSA finalised the permanent filling of the Head of the Agency's Legal Office (General Counsel) and the Chief of Staff.

Learning and Development Undertaken

During the reporting period, ARPANSA undertook a number of key learning and development activities. These included:

Executive Level Leadership Development Program

Based on the Australian Public Service Commission's SES Orientation Program, ARPANSA's Corporate Office conducted two Executive Level Leadership Development Programs during 2012–13. These programs which were conducted over four consecutive days were residential for interstate participants.

Managing behaviour in the APS workplace

Mandatory training for all staff on Managing Behaviour in the APS Workplace was conducted during the reporting period. Staff feedback on these sessions was very positive.

Certificate IV in training & assessment

ARPANSA has recently commenced a Certificate IV in Training & Assessment training program. The program is being conducted in-house and is scheduled to conclude in September 2013.

Compliance training and awareness raising sessions

ARPANSA conducted the following mandatory corporate sponsored training programs during 2012–13:

- Performance Development System run by Converge International who are ARPANSA's Employee Assistance Provider
- Risk Management Safety Essentials
- Commonwealth Procurement Rules
- Fraud Awareness and Delegations
- Security Awareness.

Workplace Diversity

ARPANSA *Workplace Diversity Program 2012-2015* continued to operate during the reporting period. The Workplace Diversity Program is supported by a *Workplace Diversity Action Plan* and in line with recent amendments to the *Public Service Act 1999*; it has been posted on ARPANSA's website.

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 Workplace Diversity Plan* 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.

The program is linked to ARPANSA's Corporate Plan and is aimed at creating an inclusive environment which respects, values and uses the contributions of staff with different backgrounds, experiences and perspectives.

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.

Work/life Balance

As in past years, 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 contained in the ARPANSA enterprise agreement 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 across all three offices: Victoria, New South Wales, and Australian Capital Territory. Assistance is available to all ARPANSA employees and their immediate families with personal or work related problems that might affect their work or life.

Converge have many years of experience and are available to help employees clarify and/or resolve issues. The program is recognised as a valuable resource for managing personal and workplace difficulties.

Carer's Rooms

ARPANSA provides a carer's room in its Victorian office and has provision to arrange for a carer's room in New South Wales at short notice. Staff in ARPANSA's Canberra offices have access to a carer's room under the terms of their tenancy arrangements. The rooms provide a temporary workplace for employees to carry out as much of

their normal work as possible while caring for their dependents and family members for whom care is temporarily unavailable. The rooms provide a quiet, comfortable environment for a variety of uses including a facility for nursing mothers.

ARPANSA Staff Consultative Forum

ARPANSA's enterprise agreement continues to provide for a Staff Consultative Forum as the key employee consultative body. The Staff Consultative Forum comprises employees elected by staff and officials from unions that are party to ARPANSA's enterprise agreement.

During the year, the Staff Consultative Forum met on seven occasions to discuss a range of issues relating to the management of ARPANSA. Agenda papers and outcomes of meetings were provided to all staff. Standing reports on the Agency's finances, activities of the Work, Health and Safety Committee and matters considered by the Executive Group and Strategic Management Committee were also provided and discussed at Forum meetings with the CEO.

Workforce Planning, Staff Turnover and Retention

At 30 June 2013, ARPANSA employed 149 staff; 138 of whom were employed on an ongoing basis. These staff were divided between the Agency's Victorian office (Yallambie) (79%), New South Wales office (Miranda) (20%) and Canberra office (1%). More detailed information about the nature and break-up of ARPANSA's workforce, retention and turnover rates is set out in Table 3.

2013 APS Employee Census

During the period May to June 2013, the Australian Public Service Commission conducted an employee census. This is the second year the census has been conducted by the Australian Public Service Commission with the timing aligned with the annual ralian Public Service Commission *State of the Service Report*. This year ARPANSA's participation rate was 86%, which was the fourth highest response rate of all Australian Public Service agencies and well above the Australian Public Service average return of 66%.

Table 3: Staff retention and turnover 2011–12 and 2012–13

	Female				Male					
Classification	**Ongoing**		**Non-Ongoing**		**Ongoing**		**Non-Ongoing**		**VARIATION**	
	June 2012	**June 2013**	**June 2012**	**June 2013**	**June 2012**	**June 2013**	**June 2012**	**June 2013**	**June 2012**	**June 2013**
SES										
Commencement										
Separation		-1								-1
Executive Level 1-2										
Commencement	+3	+1			+2	+2	+1	+1	+6	+4
Separation	-1			-1	-4	-3		-2	-5	-6
APS Level 1–6										
Commencement		+1		+2		+2	+1	+2	+1	+7
Separation	-1	-2		-1	-5	-1		-4	-6	-8

The results of the census will be a valuable source of information for ARPANSA's workforce management issues and organisational priorities and will link back into the Agency's strategic decision-making and future planning. The feedback will also help maintain ARPANSA's reputation for professional and technical excellence.

Workplace Agreements in ARPANSA

The Agency's seventh enterprise agreement, *ARPANSA Agreement 2011–2014*, which was approved by the Fair Work Commission on 15 December 2011, continued to operate throughout the 2012–13 financial year.

The agreement provides the terms and conditions of employment for all employees below the Senior Executive Service (SES) level. The agreement has a nominal expiry date of 30 June 2014. Terms and conditions of employment for the Agency's SES employees are covered under common law contracts. The salary ranges for ARPANSA's classification levels are set out in Table 4.

As at 30 June 2013, ARPANSA had approved common law contracts for two ongoing SES employees; noting that a third employee is currently acting at the SES level. The salary range available for SES employees on common law contracts is from $171 298 to $174 623 per annum.

Common Law Contracts

During 2012–13, ARPANSA's two ongoing senior SES had their remuneration arrangements set through individual common law contracts. Remuneration for SES employees on common law contracts 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. Common law contracts are structured to ensure that the remuneration arrangements are flexible and in so doing, assist in recruitment and retention of these staff.

Performance Pay

There were no performance bonuses paid in 2012–13.

Non-salary Benefits

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

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

Table 4: Salary ranges as at 30 June 2013

APS Classification	Salary Range ($)
ARPANSA Graduate	57 659 – 75 095
APS Level 1	43 252 – 49 164
APS Level 2	50 638 – 55 590
APS Level 3	57 659 – 64 516
APS Level 4	66 452 – 69 439
APS Level 5	71 523 – 75 095
APS Level 6	77 347 – 88 473
Executive Level 1	95 554 – 109 944
Executive Level 2 lower	116 761 – 132 592
Executive Level 2 upper	137 895 – 148 107

- employee assistance program
- flexible remuneration packaging scheme
- provision for business related equipment.

Commonwealth Disability Strategy

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

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 5 to 10.

Outlook for 2013–14

In keeping with the Agency's *Strategic Directions 2012-16*, ARPANSA will continue to develop its leaders and its workforce. ARPANSA is committed to building a high performance organisation and aligning its human capital management strategies with the Agency's organisational direction.

- *Strategic initiatives*. Continue to align People & Culture's 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 realignment processes
  - » developing a succession management strategy aimed at ensuring leadership continuity
  - » developing strategies aimed at addressing the key findings of the 2013 APSC employee census.
- *Service delivery initiatives*. Enhance People & Culture section's business focus through:
  - » improving consistency in the interpretation and application of employment conditions
  - » continuing the simplification/automation of People & Culture practices and procedures (for example, payroll).

Table 5: Full-time equivalent (FTE) staff by gender and classification

	Female		Male		TOTAL	
Classification	**June 2012**	**June 2013**	**June 2012**	**June 2013**	**June 2012**	**June 2013**
Graduate	-	-	-	-	-	-
APS Level 1	-	-	-	-	-	-
APS Level 2	7.68	7.68	-	-	7.68	7.68
APS Level 3	10	9.8	1	2	11	11.8
APS Level 4	6.6	6.6	1	-	7.6	6.6
APS Level 5	8.69	7.29	10	10.6	18.69	17.89
APS Level 6	9	10	21.6	20	30.6	30
Executive Level 1	14.5	13.6	28.8	26.2	43.3	39.8
Executive Level 2	2	2	21.7	22	23.7	24
SES Band 1	-	-	3	3	3	3
TOTAL	**58.47**	**56.97**	**87.1**	**83.8**	**145.57**	**140.77**

Table 6: 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 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013
New South Wales																						
Female	1	-	1	-	3	3	3	3	1	1	1	1	2	1	2	2	-	-	-	-	14	11
Male	1	1	7	6	10	7	2	3	-	-	-	-	-	1	-	-	-	-	-	-	20	18
Total	2	1	8	6	13	10	5	6	1	1	1	1	2	2	2	2	-	-	-	-	34	29
Victoria																						
Female	-	-	1	1	11	10	6	8	9	7	6	6	9	11	6	6	-	-	-	-	48	49
Male	2	2	17	19	19	19	20	17	10	11	1	-	1	1	-	-	-	-	-	-	70	69
Total	2	2	18	20	30	29	26	25	19	18	7	6	10	12	6	6	-	-	-	-	118	118
Australian Capital Territory																						
Female	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Male	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Total																						
Female	-	-	2	2	15	14	9	11	10	8	7	7	11	12	8	8	-	-	-	-	63	62
Male	3	3	24	25	29	26	22	20	10	11	1	-	1	2	-	-	-	-	-	-	90	87
TOTAL	**3**	**3**	**26**	**27**	**44**	**40**	**31**	**31**	**20**	**19**	**8**	**7**	**12**	**14**	**8**	**8**	**-**	-	-	**-**	**153**	**149**

Table 7: Inoperative staff

Classification	Female				Male				TOTAL	
	Ongoing		Non-Ongoing		Ongoing		Non-Ongoing			
	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013
SES	1								1	
Executive Level 1-2					1	1			1	1
APS Level 1–6										
Total	**1**				**1**	**1**			**2**	**1**

Table 8: Distribution of staff by Branch

Branch	Female				Male				TOTAL	
	Ongoing		Non-Ongoing		Ongoing		Non-Ongoing			
	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013
Office of the CEO	4	4	-	-	4	2	-	-	8	6
Legal Office	3	2	-	-	2	2	-	-	5	4
Radiation Health Services	22	22	1	-	29	29	1	-	53	51
Medical Radiation Services	4	4	1	1	10	9	5	8	20	22
Operations Services	9	9	-	1	19	18	1	-	29	28
Corporate Office	18	18	1	1	15	19	4	-	38	38
TOTAL	**60**	**59**	**3**	**3**	**79**	**79**	**11**	**8**	**153**	**149**

Table 9: Staff employed under the PS Act

	Full-time Ongoing		Full-time Non-Ongoing		Part-time Ongoing		Part-time Non-Ongoing		TOTAL	
	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013	June 2012	June 2013
Female	51	48	3	1	9	11	-	2	63	62
Male	77	79	9	4	2	-	2	4	90	87
TOTAL	**128**	**127**	**12**	**5**	**11**	**11**	**2**	**6**	**153**	**149**

Table 10: Staff by gender and classification

	Female		Male		TOTAL	
Classification	**June 2012**	**June 2013**	**June 2012**	**June 2013**	**June 2012**	**June 2013**
Graduate	-	-	-	-	-	-
APS Level 1	-	-	-	-	-	-
APS Level 2	8	8	-	-	8	8
APS Level 3	11	12	1	2	12	14
APS Level 4	7	7	1	-	8	7
APS Level 5	10	8	10	11	20	19
APS Level 6	9	11	22	20	31	31
Executive Level 1	15	14	29	27	44	41
Executive Level 2	2	2	24	24	26	26
SES Band 1	1	-	3	3	4	3
TOTAL	**63**	**62**	**90**	**87**	**153**	**149**

- *Service promotion initiatives*. Increase ARPANSA's understanding of People & Culture 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.

Purchasing

In 2012–13, with exception of those instances reported in the Certificate of Compliance, ARPANSA complied with the Government's purchasing policies as stated in the Commonwealth Procurement Rules (CPRs). ARPANSA's Procurement activities for the year, were consistent with the 'value-for-money' rule underpinning the CPRs.

ARPANSA's *Annual Procurement Plan* was published on the AusTender website in June 2013.

Asset Management

ARPANSA manages non-financial assets totalling $27.5 million. The major categories are land and buildings and infrastructure plant and equipment. ARPANSA's Capital Investment plan is reviewed annually to ensure on-going building maintenance and renovation; equipment purchases and IT infrastructure upgrades meet future research and operational requirements.

Consultants

During 2012–13, nine new consultancy contracts were entered into involving total actual expenditure of $262 593. In addition, five ongoing consultancy contracts were active during the 2012–13 year, involving total actual expenditure of $75 058.

The Agency policy on selection and engaging consultants is in accordance with the CPRs, based on the core rule of value for money and underpinned by:

- encouraging competitive and non-discriminatory processes
- using Commonwealth resources in an efficient, effective, economical and ethical manner that is not inconsistent with the policies of the Commonwealth
- making decisions in an accountable and transparent manner
- considering the risks
- conducting a process commensurate with the scale and scope of the procurement.

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 at: www.tenders.gov.au.

Appendices

Appendix 1: Stakeholder Engagement

Table 11: ARPANSA stakeholder engagement activities

Date	Event
14 August 2012 and 11 April 2013	ARPANSA hosted two UV Alert meetings, which is a joint Australian/New Zealand Committee examining ways of disseminating information to the public on UV levels and the UV index more effective.
August 2012	ARPANSA releases draft Amendment No. 6 to the *National Directory for Radiation Protection* for public consultation on its website.
August 2012	ARPANSA invites public submissions on its *Draft Regulatory Guide: Licensing of Radioactive Waste Storage and Disposal Facilities*. Public submissions close on 24 September 2012.
16 November 2012 and 28 June 2013	ARPANSA convenes a meeting of the Electromagnetic Energy Reference Group which included representatives from community groups, industry and government to discuss the health impacts of electromagnetic radiation from telecommunication. The November meeting focused on ARPANSA's health impact review including presentations by an expert panel on their findings.
15-18 October 2012	ARPANSA staff members deliver presentations at the Australasian Radiation Protection Society annual conference held in Sydney.
14 December 2012	ARPANSA assists Australian Transport Safety Bureau by recovering and making safe radiological material from its Canberra Offices which were gathered as evidence from an aviation accident investigation in Queensland.
19 November 2012	ARPANSA hosts Licence Holders' Forum at the Australian Institute of Nuclear Science and Engineering, Lucas Heights, Sydney which was attended by fifty-three representatives from twelve licence-holder organisations.
November 2012	ARPANSA hosts IAEA funded regional Transport Security of Nuclear Material training course which involved regulatory and operational representatives and focusing upon capacity building for Transport Security within our region. Sixteen regional and six Australian delegates from counterpart nuclear agencies attended.
16 May 2013	ARPANSA hosts a community information session at Engadine Community Centre relating to ANSTO's licence applications for the proposed Intermediate Waste Store at Lucas Heights Science and Technology Centre, the ANSTO Nuclear Medicine Molybdenum-99 Facility and the ANSTO SyMo Facility.
June 2013	ARPANSA releases a draft *Fundamentals for Protection against Ionising Radiation* for public consultation on its website and public consultations closed in mid-August 2013.
6-9 May 2013	ARPANSA hosts an International Conference on the Use of Computers in Radiation Therapy (ICCR 2013) in Melbourne which is a key meeting for those involved in Monte Carlo and Treatment Planning for radiotherapy. Eight ARPANSA staff attended and presented three posters and one oral paper.

Appendix 2: Work Health and Safety

Work Health and Safety Committee

ARPANSA staff, management and the unions consult through the operation of the Work Health and Safety Committee. The committee is chaired by the CEO and made up of Health and Safety Representatives and management representatives of all branches. The committee meets five times a year.

Work health and safety measures taken in 2012–2013 include the following:

- influenza immunisations for staff in all three campuses
- training of Health and Safety Representatives in the responsibilities expected of them under the *Work Health and Safety Act 2011*
- completion of further Yallambie renovations and property services to better comply with the new Work Health and Safety Act
- delivery of additional mandatory Work Health and Safety training for all staff, both workers and managers.

At the meetings there was a demonstrated collegiate approach by committee members to address and rectify as quickly as possible, any issues that arose during the meetings.

This financial year work continued on the renovation of the Yallambie Campus and the images below show the premises before and after completion of the works. The renovation included the development of building code compliant disabled access, enhanced security and modernised reception facilities.

Health and Safety Management Arrangements

Health and Safety Management Arrangements have been in place in ARPANSA since late 2007. The arrangements explain the following:

- roles and responsibilities
- consultation
- confidentiality
- organisational arrangements, including dispute resolution
- implementation
- review.

Incidents or Injuries

ARPANSA's health and safety environment remained positive with only one lost time injury in the 2012–13 year. Whilst 19 reports were submitted, 11 were to report hazards and 8 to report injuries. Of these injuries, one involved lost time, one required medical treatment and the others were dealt with by the first aid officers.

With regard to the 19 reports, 16 were from Yallambie and 3 were from Miranda. There were no reports from the Canberra office.

Each report has been followed up to ensure that any action required to create a safer working environment has been addressed.

Yallambie renovations - before and after completion

Table 12: 2012–13 Work Health & Safety Inspection Schedule

Date	Location
July 2012	Yallambie – ground and first floor
September 2012	Yallambie – ground floor east
November 2012	Yallambie – facilities and grounds including roof and basement
March 2013	Miranda – all areas
May 2013	Yallambie – first floor

The reporting system has been overhauled to create forms that more accurately reflect the information required about incidents, hazards or accidents. These forms also now contain an appendix that must be completed should the situation involve radiation. The Incident Register format has also been updated and is made available to staff on the intranet.

As one incident involved asbestos, Comcare was advised resulting in the attendance at the Yallambie campus of a Comcare inspector. The inspection was undertaken and a report provided by Comcare stating: "*There are no issues or actions arising from this visit*."

Investigations or Notices Given

Consistent with previous years, no investigations were conducted or notices given during 2012–13 relevant to sections 85, 90, 191, 195 and 198 of the Work Health and Safety Act.

Appendix 3: Information Publication Scheme

Agencies subject to the *Freedom of Information Act 1982* are required to publish information to the public as part of the *Information Publication Scheme*. This requirement is in Part II of the Freedom of Information 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 Information Publication Scheme requirements.

ARPANSA as an Australian Government agency is subject to the Freedom of Information Act and is required to comply with the Information Publication Scheme provisions. ARPANSA has developed an Agency plan describing ARPANSA's compliance with the Information Publication Scheme provisions as required by s 8(1) of the Freedom of Information Act.

The plan can be accessed at: www.arpansa.gov.au/ips.cfm.

Feedback on this plan can be provided by contacting the Freedom of Information 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 4: 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 2012–13 total expenditure on advertising and public notices amounted to $23 274 (inclusive of GST).

Details of payments of $12 100 and above (inclusive of GST), as required under section 311A of the *Commonwealth Electoral Act 1918*, are contained in Table 13.

Table 13: Details of payments of $12 100 and above (inclusive of GST) for advertising and public notices during 2012–13

Organisation	Purpose	Expenditure
Ad Corp	Tender and recruitment advertising	$23 274

Appendix 5: 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 the Sydney, Melbourne and Canberra 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
- 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 has commenced planning for the third stage of the Yallambie building renovations. Funding for stage 3 was provided in the Federal Budget on 14 May 2013.

This latest stage of works addresses the balance of the Work Health and Safety risks identified in an independent audit report commissioned by ARPANSA included safety issues with the fire protection and emergency systems and the continuing presence of asbestos. These constituted non-compliance with the Building Code of Australia and/or the Australian Standards. The first stage of upgrades of the building will ensure that it is fit for purpose and compliant with the Building Code of Australia and/or the Australian Standard and ensure that the physical requirements of the Work Health and Safety legislation are achieved. Under new Workplace Health and Safety laws, the Government is responsible for providing a safe workplace for its staff. The upgrade will allow for ARPANSA to continue to deliver laboratory services and staff would have a safe physical work environment in which to operate. Further upgrades to the building would be needed at a later date.

Appendix 6: 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 2012–13 are provided in Table 14.

Table 14: Legal services expenditure by ARPANSA for 2012–13

Legal Service	Expenditure (incl. GST)
Agency's total legal services expenditure	649 825
Agency's total external legal services expenditure	28 751
External expenditure on solicitors	-
External expenditure on counsel	-
Other disbursements on external legal services	-
Agency's total internal legal services expenditure	621 074

Appendix 7: ARPANSA Licensing Activities

Table 15: 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 Defence Force	F0252	Breach of s30(1) of the Act. Possession of a linear accelerator for industrial radiography at Port Wakefield without the appropriate facility licence.	R12/04197
Australian Defence Force	S0042	Breach of s31(2) of the Act by failing to follow licence conditions. Unauthorised disposal of 87 items of controlled apparatus and controlled material.	R12/07909
Commonwealth Scientific and Industrial Research Organisation (CSIRO) -Ecosystem Sciences	S0017	Breach of s31(2) of the Act. Personal monitoring device had not been collected and promptly submitted for assessment.	R13/00322
CSIRO Ecosystem Sciences	S0017	Breach of s31(2) of the Act. Sealed source assemblies used in portable gauges not locked in the shielded position whilst in storage or during transport.	R13/00322
Australian Nuclear Science and Technology Organisation (ANSTO)	F0240	Breach of Licence Condition 6 of Schedule 2 of Licence F0240 for the Gamma Irradiator Suite – failure to calibrate area radiation monitor at the required interval.	R13/05064

Table 16: Facility licences as at 30 June 2013

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	17
Australian Radiation Protection and Nuclear Safety Agency	1
Commonwealth Scientific and Industrial Research Organisation	2
Department of Sustainability, Environment, Water, Population and Communities – Parks Australia	1
Total	**33**

Table 17: Source licences as at 30 June 2013

Commonwealth entity	Licences held
ANU Enterprise Pty Ltd	1
ASC Pty Ltd and ASC AWD Shipbuilder Pty Ltd	1
Attorney-General's Department	2
AUSTRAC	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	3
Australian Postal Corporation	1
Australian Quarantine and Inspection Service	1
Australian Radiation Protection and Nuclear Safety Agency	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)	11
Decipha Pty Ltd	1
Department of Climate Change and Energy Efficiency	1
Department of Foreign Affairs and Trade	1
Department of Infrastructure and Transport	1
Department of Immigration and Citizenship	1
Department of Innovation, Industry, Science and Research – National Measurement Institute	1
Department of Parliamentary Services	1
Department of the Prime Minister and Cabinet	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

Table 17: Source licences as at 30 June 2012 (cont).

Commonwealth entity	Licences held
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
Department of Sustainability, Environment, Water, Population and the Communities – Supervising Scientist	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	**61**

Appendix 8: Operations of the Radiation Health and Safety Advisory Council and Committees

Operations of the Radiation Health and Safety Advisory Council 2012–13

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

Council for the 2012–14 triennium is composed of the following:

Chair:
Ms Sylvia Kidziak AM (NSW)
(until December 2013)

CEO of ARPANSA:
Dr Carl-Magnus Larsson (NSW)

Person to represent the interests of the general public:
Em Prof Ian Lowe AO (Qld)

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

Nominee of the Chief Minister of the Northern Territory:
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 Council information 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 into the Radiation Protection Series as RPS 2.2: *Safety Guide for Approval Processes for the Safe Transport of Radioactive Materials*, which would support the implementation of the Transport Code RPS 2.

Other Issues Considered

The Council meetings held in Adelaide and Brisbane afforded members the opportunity to meet with representatives of the local radiation regulatory authorities (South Australian Environment Protection Authority and Queensland Health respectively) and be briefed on current radiation regulatory issues facing those jurisdictions.

The focus of the August 2012 meeting in Adelaide was on radiation issues in mining and management of radioactive waste. Council revisited its 2010 scoping review on the management of intermediate level radioactive waste and discussed recent ARPANSA activities in this area. Council also had valuable interaction with representatives from the Department of Resources, Environment and Tourism who provided an overview of their national strategy for waste disposal. In an open forum with representatives from a number of mining companies and organisations Council discussed specific radiation issues facing the Uranium mining industry. Council also had the opportunity to discuss such topics as: the Australian National Dose Register, the recent International Commission Radiological Protection recommendations on assessment of radon progeny dose, education of radiation safety officers, safe transport of radioactive material and risk perception. Council followed up with recommendations to the CEO ARPANSA on these issues.

One of the three strategic priority areas of work for Council is the field of medical radiation. At the December 2012 meeting in Melbourne, Council welcomed the Chief Medical Officer who attended. This provided an opportunity for members to be briefed on his role and for the Chief Medical Officer to gain an understanding of Council's interest in radiation related health issues impacting Australia. Council's visit to Melbourne's Austin Health Hospital facilities to tour a range of medical radiation departments and laboratories allowed members from non-medical backgrounds to better comprehend the clinical and research settings of medical radiation matters discussed. A forum was held following the tour to discuss various aspects of operations at the centre.

Council requests regular briefings from the ARPANSA Medical Radiation Branch which has a number of ongoing activities of interest including the Australian Clinical Dosimetry Service, the development of national Diagnostic Reference Levels and the survey of Australian Per Capita Dose from Nuclear Medicine and Diagnostic Radiology.

The April 2013 meeting in Brisbane expanded on both mining and medical related topics. Queensland plan to reintroduce uranium mining and Council was briefed on the recommendations of a recent report into this proposal. When considering mining operations and particularly the aspects of transport and disposal of radioactive materials, Council frequently discusses the importance of risk informed decision making to ensure radiation protection. Engagement with stakeholders and the wide range of cultural groups in Australia with an interest in radiation risk and safety is emphasised in all reports to the CEO ARPANSA.

Council made good progress with achieving the outcomes of its 2008-12 strategic directions which focussed on three priority areas: medical radiation, communication with decision makers and constituency building and training. Key priority areas for ongoing Council consideration in 2013-14 have also been agreed.

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

Operations of the Radiation Health Committee 2012–13

The Radiation Health Committee met on three occasions during the year in July, November and March.

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

National policy and publication development program

Part of the Committee's remit is to develop policies, codes and standards that reflect international best practice. During the year, the Committee considered progress on development or revision of various publications.

The current top level document in the Radiation Protection Series: RPS 1, *Recommendations for Limiting Exposure to Ionizing Radiation and National Standard for Limiting Occupational Exposure to Ionizing Radiation (republished 2002)*, is being revised to incorporate recent changes to international best practice. 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 Radiation Protection in Planned Exposure Situations For Occupational and Public Exposure*, as a high priority project. Drafting of the documents has been progressing and at the March 2013 meeting the Committee approved the Fundamentals document to be released for public consultation.

In July 2012 the Committee agreed with a recent review of the Medical Safety Guides (RPS 14.1, 14.2 & 14.3) that indicated revision of these publications was not required at this time. It was noted however that the Medical Code (RPS 14) would need to be revised to align with the IAEAs *General Safety Requirements - Part 3* (BSS). The Committee agreed in principle that this should be undertaken when the requirements within the new planned practices code are well defined.

At its July 2012 meeting, the Committee approved a draft *Safety Guide for the Approval Processes for the Safe Transport of Radioactive Materials* for publication as RPS 2.2 and recommended that it be forwarded the Radiation Health and Safety Advisory Council for its recommendation on adoption. This safety guide supports RPS 2 the *Code of Practice for the Safe Transport of Radioactive Material* (2008). In March 2013, the Committee approved a project plan to revise RPS 2 to bring Australia up to date with the 2012 edition of the IAEA *Regulations for Safe Transport of Radioactive Material*.

The Committee was updated regularly on progress on the suite of amendments currently under development and soon to be proposed for the *National Directory for Radiation Protection* (NDRP). At its July 2012 meeting, the Committee endorsed NDRP Amendment 6, which includes exemptions for certain lighting products; additional authorisation criteria for chiropractors; and minor changes

to Schedule 13 (incident reporting) for public consultation. This amendment was later approved and forwarded through the relevant national approval channels, with publication of the revised NDRP expected in late 2013.

Other matters considered

The Committee noted the moves by several jurisdictions to ban the use of commercial solaria from 2015 and recognised that if a national ban was proposed the NDRP would need to be revised.

The Radiation Health Committee statement on *Safe Handling of Deceased Persons Recently Treated with Radioactive Material* was updated and reissued in July 2012. A new *Statement on Expectations for a Qualified Expert* in relation to the Medical Code (RPS 14) was issued in September 2012 to clarify the competency requirements for each required function in RPS 14.

The Committee considered interim statistics on radiation incidents reported to the Australian Radiation Incident Register as occurring in the 2012 calendar year at the March 2013 meeting. The Committee was also provided with a presentation on the causes and consequences of a series of radiotherapy mistreatments in France. It was noted that the NDRP Schedule 13 revision currently underway would include a review of criteria for reporting radiotherapy incidents to the Incident Register.

At each meeting, the Committee was briefed on international developments, including the IAEA publication program, and on IAEA, the International Commission on Radiological Protection and the United Nations Scientific Committee on the Effects of Atomic Radiation 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.

Operations of the Nuclear Safety Committee 2012–13

The role of the Nuclear Safety Committee (NSC) is to advise the CEO and the Radiation Health and Safety Advisory Council on matters relating to nuclear safety and the safety of controlled facilities. This includes reviewing and assessing the effectiveness of standards, codes, practices and procedures. During the first year of the new triennium, the Committee was chaired by Dr Carl-Magnus Larsson, CEO of ARPANSA. The CEO appointed Dr Tamie Weaver to Chair the Committee from 1 January 2013 to 31 December 2014.

A summary of each meeting is available on the ARPANSA website 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, which highlighted the relevance of a holistic approach to safety ARPANSA is currently implementing in its regulatory activities.
- The nuclear safety aspects of the proposed applications from ANSTO including the Moly-99 Facility, the Interim Waste Store and the Synroc facility. The NSC provided the CEO with formal advice on the safety implications of these proposed applications.
- ARPANSA regulatory guidance and assessment methodologies 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.
- Draft ARPANSA regulatory guidance on the ranking licence holder risks and providing advice regarding standards of risk assessment that ARPANSA should expect is undertaken by its license holders.
- Briefings and discussions on: the management of Australian Commonwealth Nuclear facilities including the 20MW OPAL Reactor; Radiopharmaceutical production facilities; and storage of Commonwealth radioactive waste.

The Committee toured the Australian Synchrotron in Clayton, Victoria, which transferred to ANSTO control on 1 January 2013 under an ARPANSA facility licence. The Committee was briefed on the Australian Synchrotron's ongoing and future projects that will be subject to regulatory assessment and oversight.

Appendix 9: Publications

Codes of Practice and Safety Guides

Australian Radiation Protection and Nuclear Safety Agency. *Safety Guide for the Approval Processes for the Safe Transport of Radioactive Materials* (2012) Radiation Protection Series No. 2.2.

Book Chapters

Martin P and McBride J, *Radionuclide behaviour and transport in the tropical atmospheric environment* Chapter 2, (2012) Tropical Radioecology, pp. 59-91. Elsevier.

Vajda N, Martin P and Kim C-K, *Alpha Spectrometry* Chapter 6, Handbook of Radioactivity Analysis (3rd ed.) (2012) pp. 363-422. Elsevier.

Journal Articles

Alqathami M, Blencowe A, Qiao G, Butler D and Geso M, *Optimization of the sensitivity and stability of the PRESAGE TM dosimeter using trihalomethane radical initiators*, Radiation Physics and Chemistry 81 (2012) 867–873.

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Gies P, Makin J, Dobbinson S, Javorniczky J, Henderson S, Guilfoyle R and Lock J, *Shade Provision for Toddlers at Swimming Pools in Melbourne*, (2013) Photochem Photobiol 89; 968-973.

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Hayton A, Wallace A, Marks P, Edmonds K, Tingey D and Johnston P, *Australian diagnostic reference levels for multi detector computed tomography*, Australian Physical & Engineering Sciences in Medicine 36(1) (2013) 19–26.

Hayton A, Wallace A, Marks P, Edmonds K, Tingey D and Johnston P, *Australian per caput dose from diagnostic imaging and nuclear medicine*, Radiation Protection Dosimetry, (2013), doi:10.1093/rpd/nct101.

Lonski P, Taylor M, Franich R, Harty P and Kron T, *Assessment of leakage doses around the treatment heads of different linear accelerators*, Radiat. Prot. Dosimetry 154 (4) (2012) 304-312.

Lye J, Butler D, Ramanathan G and Franich R, *Spectral differences in 6 MV beams with matched PDDs and the effect on chamber response*, Phys. Med. Biol. 57 No. 22 (2012).

Marks P, Wallace A and Hayton A, *Report on the European DOSE DATAMED projects*, The Gamma Gazette: Journal of the Australian and New Zealand Society of Nuclear Medicine, March 2013, p18-19.

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Technical Reports

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Long S, Sdraulig S, Tate B and Martin P, *A survey of naturally occurring radioactive material associated with mining*, ARPANSA Technical Report TR161, August 2012.

Long S and Green L, *Radioactivity enhancement factors of Maralinga soils*, ARPANSA Technical Report 157, July 2012.

O'Brien R, Carpenter J, Grzechnik M, Long S, Green L, *Maralinga and Oak Valley Dose Assessment – 2011*, ARPANSA Technical Report TR158, July 2012.

Urban D, *Isotopic ratios of uranium in uranium salts and pitchblende*, ARPANSA Technical Report 160, July 2012.

Conference Papers

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Butler D, Webb D, Oliver C, Lye J, Harty P, Ganesan R, Anele N, Wright T and Cole A *The Australian gray – how does it compare overseas?*, Engineers and Physical Scientists in Medicine conference, Gold Coast, 2-6 December 2012.

Carpenter J, Grzechnik M, Newbery S, Tinker R, and Sdraulig S, *Dose Reconstruction: Short-tailed shearwater (Mutton Bird)*, South Pacific Environmental Radioactivity Association Conference, Sydney, October 2012

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Grzechnik M and Tinker R, *Radiological Protection of the Environment in Australia – Developing a Safety Guide*, ARPS Conference, Sydney, October 2012.

Harty P and Webb D, *Safe Installation of a 140 TBq 60CoTeletherapy Source at ARPANSA*, Australian Radiation Protection Society conference, Sydney, 14-17 October, 2012.

Harty P, *Direct calibration of Australian hospital reference chambers in linac beams*, International Conference on Radiation Protection in Medicine, Bonn, 3-7 December 2012.

Hayton A and Wallace A, *Australian adult diagnostic reference levels for multi detector computed tomography*, Engineering and Physical Sciences in Medicine Conference (EPSM), Gold Coast, 2-6 Dec 2012.

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Hirth G, *Concentration ratios in non-human biota inhabiting Australian Uranium Mining environments*, South Pacific Environmental Radioactivity Association Conference, Sydney, October 2012.

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Sdraulig S, *Radiation emergency response – the laboratory perspective*, South Pacific Environmental Radioactivity Association Conference, Sydney, October 2012.

Tinker R, *The Japan Nuclear Accident*, International Uranium Conference, Fremantle, July 2012.

Urban D, *Uranium isotopic ratio determinations in uranium salts and pitchblende*, South Pacific Environmental Radioactivity Association Conference, Sydney, October 2012.

Wright T, Lye J, Butler D and Webb D, *Commissioning the Elekta MLCi and MLCi2 leaf designs using BEAMnrc*, Engineers and Physical Scientists in Medicine conference, Gold Coast, 2-6 December 2012.

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Collett S, *The Australian National Radiation Dose Register for Uranium Mine Workers*, Health Canada, Canada, November 2012.

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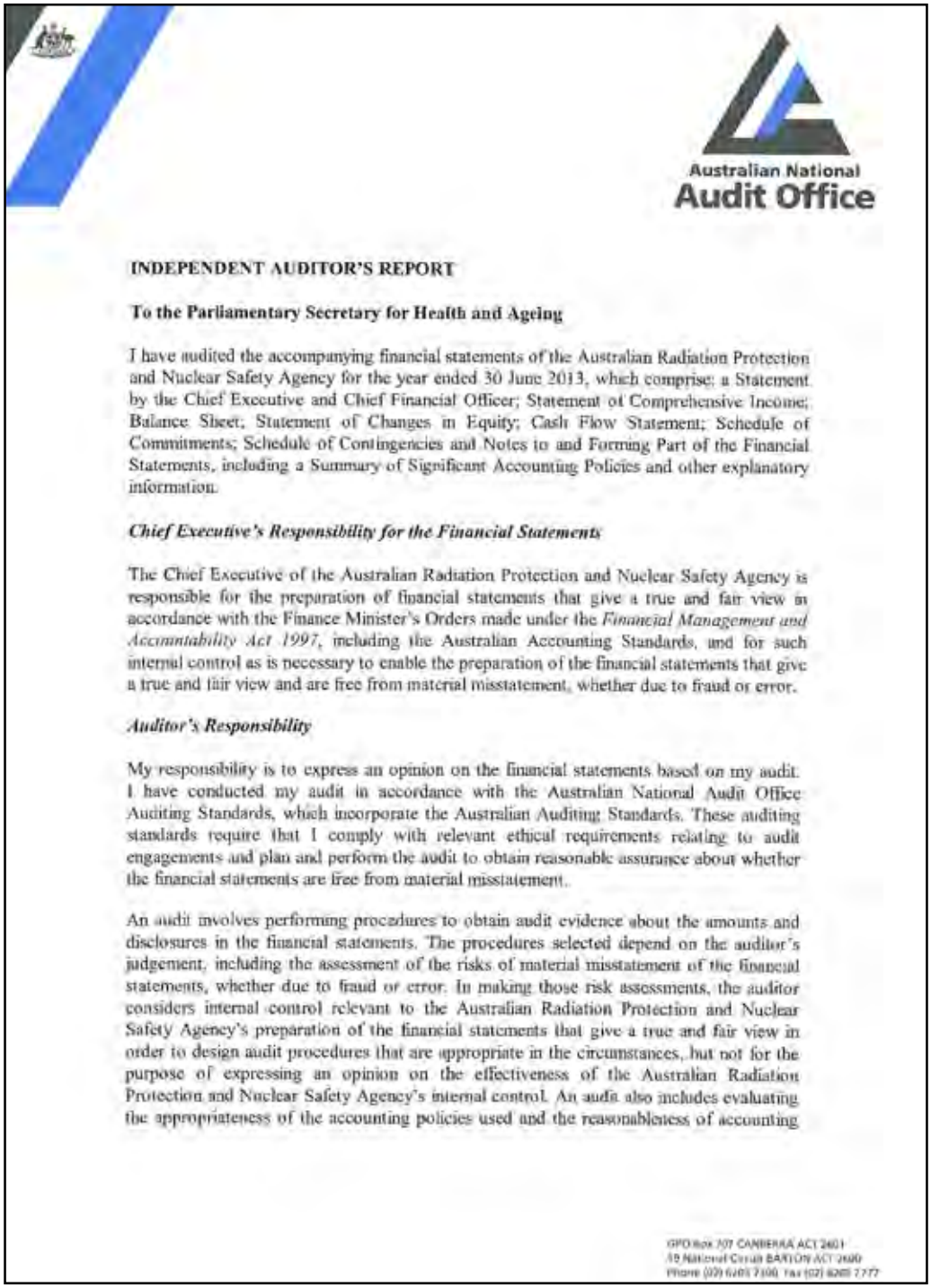
Appendix 10: Financial Statements for the Year Ended 30 June 2013



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 2013, 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 and other explanatory information.

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

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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.

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 2013 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
17 September 2013

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)

Financial Statements - 30 June 2013

STATEMENT BY THE CHIEF EXECUTIVE AND CHIEF FINANCIAL OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2013 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..... Signed.....

Carl-Magnus Larsson
Chief Executive

11 September 2013

George Savvides
Chief Financial Officer

11 September 2013

ARPANSA
STATEMENT OF COMPREHENSIVE INCOME
for the period ended 30 June 2013

	Notes	2013 $	2012 $
EXPENSES			
Employee benefits	3A	**17,314,382**	17,917,929
Supplier	3B	**7,726,220**	8,502,966
Depreciation and amortisation	3C	**2,330,302**	2,542,795
Write-down and impairment of assets	3D	**30,279**	172,509
Foreign exchange losses	3E	**-**	535
Total expenses		**27,401,183**	29,136,734
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Sale of goods and rendering of services	4A	**7,131,176**	6,715,124
Licence fees	4B	**4,428,701**	3,839,420
Total own-source revenue		**11,559,877**	10,554,544
Gains			
Foreign exchange	4C	**127**	-
Other gains	4D	**55,000**	54,250
Total gains		**55,127**	54,250
Total own-source income		**11,615,004**	10,608,794
Net cost of (contribution by) services		**15,786,179**	18,527,940
Revenue from Government	4E	**13,498,000**	16,130,000
Deficit		**(2,288,179)**	(2,397,940)
OTHER COMPREHENSIVE INCOME			
Changes in asset revaluation surplus		**509,292**	3,431,286
Total other comprehensive income		**509,292**	3,431,286
Total comprehensive income (loss)		**(1,778,887)**	1,033,346

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

ARPANSA
BALANCE SHEET
as at 30 June 2013

	Notes	2013 $	2012 $
ASSETS			
Financial Assets			
Cash and cash equivalents	5A	**999,734**	1,655,881
Trade and other receivables	5B	**1,995,377**	1,610,080
Other financial assets	5C	**113,746**	81,703
Total financial assets		**3,108,857**	3,347,664
Non-Financial Assets			
Land and buildings	6A	**18,982,031**	19,229,600
Property, plant and equipment	6B,6F	**6,121,867**	6,702,310
Intangibles	6C,6G	**622,129**	798,005
Inventories	6D	**1,437,945**	1,489,587
Other non-financial assets	6E	**350,383**	459,488
Total non-financial assets		**27,514,355**	28,678,990
Total assets		**30,623,212**	32,026,654
LIABILITIES			
Payables			
Suppliers	7A	**668,277**	1,378,077
Other payables	7B	**1,289,454**	1,821,394
Total payables		**1,957,731**	3,199,471
Provisions			
Employee provisions	8	**4,909,386**	5,228,201
Total provisions		**4,909,386**	5,228,201
Total liabilities		**6,867,117**	8,427,672
Net assets		**23,756,095**	23,598,982
EQUITY			
Contributed equity		**11,056,000**	9,120,000
Reserves		**9,639,071**	9,129,779
Retained surplus		**3,061,024**	5,349,203
Total equity		**23,756,095**	23,598,982

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 2013

	Retained Earnings		Asset Revaluation Surplus		Contributed Equity/Capital		Total Equity	
	2013	2012	**2013**	2012	**2013**	2012	**2013**	2012
	$	$	**$**	$	**$**	$	**$**	$
Opening balance								
Balance carried forward from previous period	**5,349,203**	7,747,143	**9,129,779**	5,698,493	**9,120,000**	6,767,000	**23,598,982**	20,212,636
Adjusted opening balance	**5,349,203**	7,747,143	**9,129,779**	5,698,493	**9,120,000**	6,767,000	**23,598,982**	20,212,636
Comprehensive income								
Other comprehensive income - Changes in asset revaluation reserves	-	-	**509,292**	3,431,286	-	-	**509,292**	3,431,286
Deficit for the period	**(2,288,179)**	(2,397,940)					**(2,288,179)**	(2,397,940)
Total comprehensive income	**(2,288,179)**	(2,397,940)	**509,292**	3,431,286	-	-	**(1,778,887)**	1,033,346
Contributions by Owners								
Departmental capital budget	-	-	-	-	**1,936,000**	2,353,000	**1,936,000**	2,353,000
Sub-total transactions with owners	-	-	-	-	**1,936,000**	2,353,000	**1,936,000**	2,353,000
Closing balance as at 30 June	**3,061,024**	5,349,203	**9,639,071**	9,129,779	**11,056,000**	9,120,000	**23,756,095**	23,598,982

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

ARPANSA
CASH FLOW STATEMENT
for the period ended 30 June 2013

	Notes	2013 $	2012 $
OPERATING ACTIVITIES			
Cash received			
Appropriations		14,078,000	18,085,130
Sales of goods and rendering of services		11,695,459	12,148,793
Net GST received		249,167	763,107
Total cash received		26,022,626	30,997,030
Cash used			
Employees		(17,750,046)	(17,443,603)
Suppliers		(8,929,847)	(10,512,005)
Total cash used		(26,679,893)	(27,955,608)
Net cash from (used by) operating activities	9	(657,267)	3,041,422
INVESTING ACTIVITIES			
Cash used			
Purchase of property, plant, equipment and intangibles		(848,880)	(5,340,093)
Total cash used		(848,880)	(5,340,093)
Net cash (used by) investing activities		(848,880)	(5,340,093)
FINANCING ACTIVITIES			
Cash received			
Contributed equity		850,000	2,353,000
Total cash received		850,000	2,353,000
Net cash from financing activities		850,000	2,353,000
Net (decrease) increase in cash held		(656,147)	54,329
Cash and cash equivalents at the beginning of the reporting period		1,655,881	1,601,552
Cash and cash equivalents at the end of the reporting period	5A	999,734	1,655,881

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

ARPANSA
SCHEDULE OF COMMITMENTS
as at 30 June 2013

	2013	2012
BY TYPE	**$**	$
Commitments receivable		
Net GST recoverable on commitments	**(107,696)**	(181,696)
Total commitments receivable	**(107,696)**	(181,696)
Capital commitments		
Infrastructure, plant and equipment	**387,596**	501,871
Total capital commitments	**387,596**	501,871
Other commitments		
Operating leases	**261,109**	661,752
Other commitments	**535,952**	835,036
Total other commitments	**797,061**	1,496,788
Net commitments by type	**1,076,961**	1,816,963
BY MATURITY		
Other commitments receivable		
One year or less	**(107,696)**	(152,741)
From one to five years	**-**	(28,955)
Total other commitments receivable	**(107,696)**	(181,696)
Commitments payable		
Capital commitments		
One year or less	**387,596**	501,871
From one to five years	**-**	-
Total capital commitments	**387,596**	501,871
Operating lease commitments		
One year or less	**261,109**	395,002
From one to five years	**-**	266,750
Total operating lease commitments	**261,109**	661,752
Other commitments		
One year or less	**535,952**	783,283
From one to five years		51,753
Total other commitments	**535,952**	835,036
Net commitments by maturity	**1,076,961**	1,816,963

NB: Commitments are GST inclusive where relevant.

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 2013

	2013	2012
	$	$
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 2013

Note 1: Summary of Significant Accounting Policies
Note 2: Events after the Reporting Period
Note 3: Expenses
Note 4: Income
Note 5: Financial Assets
Note 6: Non-Financial Assets
Note 7: Payables
Note 8: Provisions
Note 9: Cash Flow Reconciliation
Note 10: Contingent Liabilities and Assets
Note 11: Executive Remuneration
Note 12: Remuneration of Auditors
Note 13: Compensation and Debt Relief
Note 14: Financial Instruments
Note 15: Appropriations
Note 16: Special Accounts
Note 17: Compliance with Statutory Conditions for Payments from the Consolidated Revenue Fund
Note 18: Reporting of Outcomes
Note 19: Comprehensive Income attributable to the Agency

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

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 statements have been prepared on an accrual basis and are 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 otherwise specified.

Unless an alternative treatment is specifically required by an accounting standard or the FMOs, assets and liabilities are recognised in the balance sheet when and only when it is probable that future economic benefits will flow to 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 New 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 sign-off date 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.

Parental Leave Payments Scheme

The Agency has received an amount of $10,917 (2012: $42,545) 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 in that year.

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 2013. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Separation and Redundancy

Provision is made for separation and redundancy benefit payments. The entity recognises a provision for termination when is has developed a detailed plan for terminations and has informed those employees affected that it will carry out the terminations.

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's administered schedules and notes.

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 upon trade 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 upon trade 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 measures at:**
Land	Market Value
Buildings exc.leasehold improvement	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, are written-off to their estimated residual values over their estimated useful lives to ARPANSA, using the straight-line method of depreciation. 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:

	2013	2012
Buildings on freehold land	**19 years**	6 years to 32 years
Leasehold improvements	**Lease term**	Lease term
Plant and equipment	**1 year to 27 years**	3 years to 27 years

Impairment

All assets were assessed for impairment at 30 June 2013. 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 15.5 years (2011-12: 5 to 14 years).

All intangibles assets were assessed for indications of impairment as at 30 June 2013.

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 Taxation Office; and

b) for receivables and payables.

1.20 Case Law

The Australian Government continues to have regard to developments in case law, including the High Court's most recent decision on Commonwealth expenditure in *Williams v Commonwealth* (2012) 288 ALR 410, as they contribute to the larger body of law relevant to the development of Commonwealth programs. In accordance with its general practice, the Government will continue to monitor and assess risk and decide on any appropriate actions to respond to risks of expenditure not being consistent with constitutional or other legal requirements.

Note 2: Events after the Reporting Period

On 5 August 2013, 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 2012-2013 was: $88,000.

Note 3: Expenses

	2013 $	2012 $
Note 3A: Employee benefits		
Wages and salaries	**12,431,538**	12,212,147
Superannuation - defined contribution	**2,075,126**	1,964,210
Superannuation - defined benefit	**381,282**	374,919
Leave and other entitlements	**2,216,693**	2,942,803
Separation and redundancies	**209,743**	423,850
Total employee benefits	**17,314,382**	17,917,929
Note 3B: Suppliers		
Goods and services		
Audit fees	**147,598**	150,447
Committees	**116,811**	125,751
Communications	**592,880**	719,994
Construction and maintenance - CTBT	**523,855**	386,029
Contractors/Consultants	**787,277**	736,798
Information technology	**643,220**	763,248
Insurance	**522,917**	485,793
Laboratory	**267,974**	239,177
Postage and freight	**187,020**	169,173
Reference material & subscriptions	**235,363**	267,836
Repair and maintenance	**388,886**	399,439
Training and conferences	**353,976**	312,830
Travel	**1,126,680**	1,488,740
Utilities	**560,310**	470,004
Other goods and services	**834,135**	1,323,185
Total goods and services	**7,288,902**	8,038,444
Provision of goods – external parties	**1,534,544**	1,764,919
Rendering of services – related entities	**1,341,367**	1,635,034
Rendering of services – external parties	**4,413,021**	4,638,491
Total goods and services	**7,288,932**	8,038,444
Other supplier expenses		
Operating lease rentals - external entity		
Minimum lease payments	**384,159**	409,707
Workers compensation premiums	**53,129**	54,815
Total other supplier expenses	**437,288**	464,522
Total supplier expenses	**7,726,220**	8,502,966
Note 3C: Depreciation and amortisation		
Depreciation:		
Infrastructure, plant and equipment	**1,269,818**	1,332,400
Buildings	**824,133**	861,024
Total depreciation	**2,093,951**	2,193,424
Amortisation:		
Intangibles:		
Computer software	**236,021**	349,041
Other	**330**	330
Total amortisation	**236,351**	349,371
Total depreciation and amortisation	**2,330,302**	2,542,795
Note 3D: Write-down and impairment of assets		
Impairment on financial assets	**30**	246
Property, plant and equipment - write-off	**11,197**	44,483
Computer software - write-off	**17,630**	-
Inventories - write-off	**1,422**	87,970
Revaluation decrement -Infrastructure, plant and equipment	-	39,810
Total write-down and impairment of assets	**30,279**	172,509
Note 3E: Foreign exchange losses		
Non-speculative	-	535
Total foreign exchange losses	-	535

Note 4: Income

	2013	2012
Own-source revenue	**$**	$
Note 4A: Sale of goods and rendering of services		
Scientific services - PRMS	**2,505,819**	2,529,588
Construction and maintenance contracts - CTBT	**2,017,644**	1,449,170
Other scientific services	**2,607,713**	2,736,366
Total sale of goods and rendering of services	**7,131,176**	6,715,124
Provision of goods - related entities	**1,754**	5,552
Provision of goods - external parties	**312,586**	353,731
Rendering of services - related entities	**1,062,217**	1,133,323
Rendering of services - external parties	**5,754,619**	5,222,518
Total sale of goods and rendering of services	**7,131,176**	6,715,124
Note 4B: Licence fees		
Application fees	**528,797**	32,198
Annual charges	**3,899,904**	3,807,222
Total licence fees	**4,428,701**	3,839,420
Gains		
Note 4C: Foreign exchange gains		
Non-speculative	**127**	-
Total foreign exchange gains	**127**	-
Note 4D: Other gains		
Resources received free of charge - ANAO audit fees	**55,000**	54,250
Total other gains	**55,000**	54,250
Revenue from Government		
Note 4E: Revenue from Government		
Appropriation:		
Departmental appropriation	**13,498,000**	16,130,000
Total revenue from Government	**13,498,000**	16,130,000

The Agency has received $10,917 (2012: $42,454) under the Parental Leave Payments Scheme.

Note 5: Financial Assets

	2013	2012
	$	$
Note 5A: Cash and cash equivalents		
Special accounts	**962,856**	1,627,194
Cash on hand or on deposit	**36,878**	28,687
Total cash and cash equivalents	**999,734**	1,655,881
Note 5B: Trade and other receivables		
Goods and services	**924,516**	956,995
Appropriations receivable:		
for existing program	**1,086,000**	580,000
GST receivable from the Australian Taxation Office	**4,560**	78,857
Other receivables	**-**	15,717
Total trade and other receivables (gross)	**2,015,076**	1,631,569
Less impairment allowance account		
Goods and services	**(19,699)**	(21,489)
Total trade and other receivables (net)	**1,995,377**	1,610,080
Receivables are expected to be recovered in:		
No more than 12 months	**1,995,377**	1,610,080
More than 12 months	**-**	-
Total trade and other receivables (net)	**1,995,377**	1,610,080
Receivables are aged as follows:		
Not overdue	**1,890,586**	1,525,012
Overdue by:		
0 to 30 days	**97,299**	93,722
31 to 60 days	**26,937**	12,647
61 to 90 days	**254**	188
More than 90 days	**-**	-
Total receivables (gross)	**2,015,076**	1,631,569
The impairment allowance account is aged as follows:		
Overdue by:		
0 to 30 days	**-**	8,654
31 to 60 days	**19,445**	12,647
61 to 90 days	**254**	188
More than 90 days		-
Total impairment allowance account	**19,699**	21,489
Reconciliation of the impairment allowance account		
Goods and services		
Opening Balance	**21,489**	40,800
Amounts recovered and reversed	**915**	1,413
Amounts written off	**(2,735)**	(20,970)
Increase/decrease recognised in net surplus	**30**	246
Closing Balance	**19,699**	21,489
Note 5C: Other financial assets		
Accrued revenue	**113,746**	81,703
Total other financial assets	**113,746**	81,703

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

Note 6: Non-Financial Assets

	2013 $	2012 $
Note 6A: Land and buildings		
Land at fair value	**4,800,000**	4,500,000
Buildings on freehold land:		
– work in progress	**-**	-
– fair value	**14,118,000**	14,570,000
– accumulated depreciation	**-**	-
Total buildings on freehold land	**14,118,000**	14,570,000
Leasehold improvements		
– fair value	**159,600**	159,600
– accumulated depreciation	**(95,569)**	-
Total leasehold improvements	**64,031**	159,600
Total land and buildings	**18,982,031**	19,229,600

Revaluation of land and buildings

All revaluations are conducted in accordance with the revaluation policy stated at Note 1. On 30 June 2013 independent valuers from the Australian Valuation Office conducted a valuation of Land and Buildings. The previous revaluation was conducted on 30 June 2012.

Revaluation increments of $300,000 for land (2012: $171,000) and $209,292 for buildings on freehold land (2012: $3,416,567).

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)

	2013 $	2012 $
Note 6B: Property, plant and equipment		
Property, plant and equipment:		
– work in progress	**359,274**	47,182
– fair value	**7,026,457**	6,655,128
– accumulated depreciation	**(1,263,864)**	-
Total property, plant and equipment	**6,121,867**	6,702,310

Revaluation of property, plant and equipment

All revaluations are conducted in accordance with the revaluation policy stated at Note 1. Property, plant and equipment 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.

Note 6C: Intangibles		
Computer software:		
Externally acquired	**1,477,659**	1,359,725
Accumulated amortisation	**(1,181,375)**	(1,060,741)
Internally developed – in progress	**-**	66,007
Internally developed – in use	**1,121,464**	1,121,463
Accumulated amortisation	**(796,118)**	(689,278)
Total computer software	**621,630**	797,176
Trademarks:		
Trademarks	**4,620**	4,620
Accumulated amortisation	**(4,121)**	(3,791)
Total trademarks	**499**	829
Total intangibles	**622,129**	798,005

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)

	2013	2012
	$	$
Note 6D: Inventories		
Inventories held for sale		
Finished goods	**62,419**	56,993
Inventories held for distribution	**1,375,526**	1,432,594
Total inventories	**1,437,945**	1,489,587

During 2012-13, $106,591 of inventory held for sale was recognised as an expense (2011-12: $169,417). During 2012-13, $57,068, of inventory held for distribution was recognised as an expense (2011-12: $52,325).

No items of inventory were recognised at fair value less cost to sell.

All inventory is expected to be sold or distributed in the next 12 months.

Note 6E: Other non-financial assets		
Prepayments	**350,383**	459,488
Total other non-financial assets	**350,383**	459,488

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 (2012-13)

	Land $	Buildings $	Leasehold Improvements $	PP & E $	Total $
As at 1 July 2012					
Gross book value	**4,500,000**	**14,570,000**	**159,600**	**6,702,310**	**25,931,910**
Accumulated depreciation and impairment	-	-	-	-	-
Net book value 1 July 2012	**4,500,000**	**14,570,000**	**159,600**	**6,702,310**	**25,931,910**
Additions:					
By purchase	**-**	**67,272**		**700,572**	**767,844**
Revaluations and impairments recognised in other comprehensive income	**300,000**	**209,292**	**-**		**509,292**
Depreciation expense	**-**	**(728,564)**	**(95,569)**	**(1,269,818)**	**(2,093,951)**
Disposals:					
Other disposals	**-**	-	**-**	**(11,197)**	**(11,197)**
Net book value 30 June 2013	**4,800,000**	**14,118,000**	**64,031**	**6,121,867**	**25,103,898**
Net book value as of 30 June 2013 represented by:					
Gross book value	**4,800,000**	**14,118,000**	**159,600**	**7,385,731**	**26,463,331**
Accumulated depreciation and impairment	**-**	-	**(95,569)**	**(1,263,864)**	**(1,359,433)**
Net book value 30 June 2013	**4,800,000**	**14,118,000**	**64,031**	**6,121,867**	**25,103,898**

TABLE B – 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	-	-	-	-	-
Net book value 30 June 2012	4,500,000	14,570,000	159,600	6,702,310	25,931,910

Note 6: Non-Financial Assets (continued)

Note 6G: Intangibles

TABLE A: Reconciliation of the opening and closing balances of intangibles (2012-13)

	Computer software internally developed $	Computer software purchased $	Other intangibles - Trademarks $	Total $
As at 1 July 2012				
Gross book value	**1,121,464**	**1,425,730**	**4,620**	**2,551,814**
Accumulated amortisation and impairment	**(689,278)**	**(1,060,740)**	**(3,791)**	**(1,753,809)**
Net book value 1 July 2012	**432,186**	**364,990**	**829**	**798,005**
Additions:				
By purchase		**78,105**	-	**78,105**
Amortisation	**(106,840)**	**(129,181)**	**(330)**	**(236,351)**
Disposals:				
Other disposals	-	**(17,630)**	-	**(17,630)**
Net book value 30 June 2013	**325,346**	**296,284**	**499**	**622,129**
Net book value as of 30 June 2013 represented by:				
Gross book value	**1,121,464**	**1,477,659**	**4,620**	**2,603,743**
Accumulated amortisation and impairment	**(796,118)**	**(1,181,375)**	**(4,121)**	**(1,981,614)**
Net book value 30 June 2013	**325,346**	**296,284**	**499**	**622,129**

TABLE B: 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	200,893	-	308,466
Amortisation	(202,885)	(146,156)	(330)	(349,371)
Disposals:				
Other disposals	-		-	-
Net book value 30 June 2012	432,186	364,990	829	798,005
Net book value as of 30 June 2012 represented by:				
Gross book value	1,121,464	1,425,730	4,620	2,551,814
Accumulated amortisation and impairment	(689,278)	(1,060,740)	(3,791)	(1,753,809)
Net book value 30 June 2012	432,186	364,990	829	798,005

Note 7: Payables

	2013 $	2012 $
Note 7A: Suppliers		
Trade creditors and accruals	**664,110**	1,370,994
Operating lease rentals	**4,167**	7,083
Total supplier payables	**668,277**	1,378,077
Supplier payables expected to be settled within 12 months:		
Related parties	**81,619**	98,333
External parties	**586,658**	1,279,744
Total supplier payables	**668,277**	1,378,077
Settlement is usually made within 30 days.		
Note 7B: Other payables		
Salaries and wages	**416,936**	353,656
Superannuation	**65,578**	61,014
Separation and redundancies	**96,596**	281,290
Unearned income	**676,466**	1,098,404
GST payable to the Australian Taxation Office	**-**	-
Other	**33,878**	27,030
Total other payables	**1,289,454**	1,821,394
Other payables are expected to be settled in:		
No more than 12 months	**1,289,454**	1,821,394
More than 12 months	**-**	-
Total other payables	**1,289,454**	1,821,394

Note 8: Provisions

Employee provisions		
Leave	4,909,386	5,228,201
Total employee provisions	4,909,386	5,228,201
Employee provisions are expected to be settled in:		
No more than 12 months	1,122,600	1,021,371
More than 12 months	3,786,786	4,206,830
Total employee provisions	4,909,386	5,228,201

Note 9: Cash Flow Reconciliation

	2013 $	2012 $
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash Flow Statement	**999,734**	1,655,881
Balance Sheet	**999,734**	1,655,881
Difference	**-**	-
Reconciliation of net cost of services to net cash from operating		
Net cost of services	**(2,288,179)**	(2,397,940)
Adjustments for non-cash items		
Depreciation /amortisation	**2,330,302**	2,542,795
Revaluation decrement	**-**	39,810
Net write down of non-financial assets	**30,249**	132,453
Changes in assets / liabilities		
(Increase) / decrease in net receivables	**700,704**	3,241,785
(Increase) / decrease in inventories	**50,220**	140,779
(Increase) / decrease in prepayments	**112,035**	27,122
(Increase) / decrease in accrued revenue	**(32,043)**	313,620
Increase / (decrease) in employee provisions	**(318,815)**	489,921
Increase / (decrease) in supplier payables	**(709,801)**	(461,438)
Increase / (decrease) in other payables	**(531,939)**	(1,027,485)
Net cash from (used by) operating activities	**(657,267)**	3,041,422

Note 10: Contingent Liabilities and Assets

As at 30 June 2013, and 30 June 2012 ARPANSA had no quantifiable, unquantifiable or significant remote contingencies.

Note 11: Executive Remuneration

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

	2013	2012
	$	$
Short-term employee benefits:		
Salary	**804,145**	785,790
Annual leave accrued	**7,325**	28,040
Performance bonuses	**1,000**	-
Motor vehicle and other allowances	**109,105**	101,512
Total Short-term employee benefits	**921,575**	915,342
Post-employment benefits		
Superannuation	**125,634**	146,132
Total post-employment benefits	**125,634**	146,132
Other long-term employee benefits		
Long-service leave	**14,632**	56,162
Total other long-term employee benefits	**14,632**	56,162
Total senior executive remuneration expenses	**1,061,841**	1,117,636

Notes:

1. Note 11A was prepared on an accrual basis
2. Note 11A excludes acting arrangements and part-year service where remuneration expensed for a senior executive was less than $180,000

Note 11: Executive Remuneration (continued)

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

Average annual reportable remuneration paid to substantive senior executives in 2013

Average annual reportable remuneration[1]	Senior Executives No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
Total reportable remuneration (including part-time arrangements):						
$210,000 to $239,999	**2**	**202,850**	**30,470**	**168**	**-**	**233,488**
$300,000 to $329,999	**1**	**292,761**	**33,421**	**-**	**-**	**326,182**
Total number of substantive senior executives	**3**					

Average annual reportable remuneration paid to substantive senior executives in 2012

Average annual reportable remuneration[1]	Senior Executives No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
Total reportable remuneration (including part-time arrangements):						
$180,000 to $209,999	1	169,964	24,176	158	-	194,298
$210,000 to $239,999	1	201,099	28,658	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 number of substantive senior executives	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);
c) exempt foreign employment income; and
d) salary sacrificed superannuation

3. The 'contributed superannuation' amount is the average actual superannuation contributions paid to senior executives in that reportable remuneration band during the reporting period, as per the individuals' payslips.

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.

Note 11: Executive Remuneration (continued)

Note 11C: Other Highly Paid Staff

Average annual reportable remuneration paid to other highly paid staff in 2013

Average annual reportable remuneration[1]	Staff No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
Total reportable remuneration (including part-time arrangements):						
$180,000 to $209,999	**1**	**175,539**	**23,518**	**4,067**	**1,000**	**204,124**
$210,000 to $239,999	**1**	**195,947**	**31,273**	**-**	**1,000**	**228,220**
$240,000 to $269,999	**1**	**225,716**	**15,708**	**-**	**1,000**	**242,424**
Total number of other highly paid staff	**3**					

Average annual reportable remuneration paid to other highly paid staff in 2012

Average annual reportable remuneration[1]	Staff No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowance[4] $	Bonus paid[5] $	Total $
Total reportable remuneration (including part-time arrangements):						
$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 number of other highly paid staff	2					

Notes:

1.This table reports staff:
a) who were employed by the entity during the reporting period;
b) whose reportable remuneration was $180,000 or more for the financial year; and
c) were not required to be disclosed in Table B

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);
c) exempt foreign employment income; and
d) salary sacrificed superannuation

3. The 'contributed superannuation' amount is the average actual superannuation contributions paid to staff in that reportable remuneration band during the reporting period as per the individuals' payslips.

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.

Note 12: Remuneration of Auditors

	2013	2012
	$	$
Financial statement audit services were provided free of charge to the Agency, by the Australian National Audit Office (ANAO)		
The fair value of the financial statement audit services provided:	**55,000**	54,250
	55,000	54,250

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. (2012: No payment made).	-	-

Note 14: Financial Instruments

	2013	2012
	$	$
Note 14A: Categories of financial instruments		
Financial assets		
Loans and receivables		
Cash and cash equivalents	**999,734**	1,655,881
Trade receivables	**924,516**	956,995
Carrying amount of financial assets	**1,924,250**	2,612,876
Financial liabilities		
Other liabilities		
Trade creditors	**367,438**	1,035,892
Carrying amount of financial liabilities	**367,438**	1,035,892

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 (2013: $924,516 and 2012:$956,999). ARPANSA has assessed the risk of the default on payment and has allocated $19,699 in 2013 (2012: $21,489) 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 2013 $	Not Past Due Nor Impaired 2012 $	**Past due or impaired 2013 $**	Past due or impaired 2012 $
Cash and cash equivalent	**999,734**	1,655,881	-	-
Trade receivables (gross)	**800,026**	850,438	**124,490**	106,557
Total	**1,799,760**	2,506,319	**124,490**	106,557

Ageing of financial assets that are past due but not impaired for 2013

	0 to 30 days $	**31 to 60 days $**	**61 to 90 days $**	**90+ days $**	**Total $**
Loans and receivables					
Trade receivables (gross)	**97,299**	**26,937**	**254**	**-**	**124,490**
Total	**97,299**	**26,937**	**254**	**-**	**124,490**

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

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.

Maturities for non-derivative financial liabilities 2013

	within 1 year 2013 $'000	**1 to 5 years 2013 $'000**	**> 5 years 2013 $'000**	**Total 2013 $'000**
Trade creditors	**367,438**	**-**	**-**	**367,438**
Total	**367,438**	**-**	**-**	**367,438**

Maturities for non-derivative financial liabilities 2012

	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

ARPANSA has no derivative financial liabilities in either 2013 or 2012.

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')

	2013 Appropriations			Appropriation applied in 2013 (current and prior years)	Varianced (b)
	Appropriation Act				
	Annual Appropriation	Appropriations reduced (a)	Total appropriation		
	$	$	$	$	$
DEPARTMENTAL					
Ordinary annual services	**15,522,000**		**15,522,000**	**14,928,000**	**594,000**
Other services					
Equity	-	-	-	-	-
Total departmental	**15,522,000**	-	**15,522,000**	**14,928,000**	**594,000**

Notes:

(a) Appropriations reduced under Appropriation Acts (Nos. 1,3 and 5) 2012-13: sections 10,11, 12 and 15 and under Appropriation Acts (Nos. 2,4 and 6) 2012-13: 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. In 2012-13 , the Finance Minister did not issue a determination to reduce departmental appropriations, however there was a formal reduction of $88,000.

(b) The variance of $594,000 for departmental ordinary annual services reflects the reduced appropriation amount of $88,000 and movement in appropriation receivable of $506,000.

	2012 Appropriations			Appropriation applied in 2012 (current and prior years)	Variance (b)
	Appropriation Act				
	Annual Appropriation	Appropriations reduced (a)	Total appropriation		
	$	$	$	$	$
DEPARTMENTAL					
Ordinary annual services	**18,483,000**	-	**18,483,000**	**20,438,130**	**(1,955,130)**
Other services					
Equity	-	-	-	-	-
Total departmental	**18,483,000**	-	**18,483,000**	**20,438,130**	**(1,955,130)**

Notes:

(a) 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. In 2011-12, there was no reduction in departmental appropriations.

(b) The variance of $1,955,130 for departmental ordinary annual services reflects expenditure of prior year appropriation

Note 15: Appropriations (continued)

Table B: Departmental Capital Budgets ('Recoverable GST exclusive')

	2013 Capital Budget Appropriations			Capital Budget Appropriations Applied	
	Appropriation Act				
	Annual Capital Budget $	Appropriations reduced (b) $	Total Capital Budget Appropriations $	Payments for non-financial assets (c) $	Payments for other purposes $
DEPARTMENTAL					
Ordinary annual services - Departmental Capital Budget (a)	**1,936,000**	**-**	**1,936,000**	**848,880**	**-**

Notes:

(a) 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.

(b) Appropriations reduced under Appropriation Acts (No.1,3,5) 2012-13: sections 10, 11, 12 and 15 or via a determination by the Finance Minister.

(c) 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.

	2012 Capital Budget Appropriations			Capital Budget Appropriations Applied	
	Appropriation Act				
	Annual Capital Budget $	Appropriations reduced (b) $	Total Capital Budget Appropriations $	Payments for non-financial assets (c) $	Payments for other purposes $
DEPARTMENTAL					
Ordinary annual services - Departmental Capital Budget (a)	**2,353,000**	**-**	**2,353,000**	**2,353,000**	**-**

Notes:

(a) 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.

(b) 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.

(c) 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')

Authority	**2013**	2012
	$	$
DEPARTMENTAL		
Appropriation Act (No. 1) 2011-12	-	580,000
Appropriation Act (No. 1) 2012-13	**1,174,000**	-
Total Departmental	**1,174,000**	580,000

Note 16: Special Accounts

ARPANSA Special Account (Departmental)	**2013**	2012
	$	$
Establishing Instrument: *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	**1,655,881**	1,601,552
Appropriations credited to special account	**14,928,000**	20,438,130
GST credits (FMA Act s30A)	**249,167**	763,107
Other receipts	**11,695,459**	12,148,793
Total increase	**26,872,626**	33,350,030
Available for payments	**28,528,507**	34,951,582
Payments made to employees	**(17,750,046)**	(17,443,603)
Payments made to suppliers	**(9,778,727)**	(15,852,098)
Total decrease	**(27,528,773)**	(33,295,701)
Total Balance carried to next period	**999,734**	1,655,881

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 2012-13 additional legal advice was received that indicated there could be breaches of Section 83 under certain circumstances with payments for long service leave, goods and services tax and payments under determinations of the Remuneration Tribunal. The agency has reviewed its processes and controls over payments for these items to minimise the possibility for future breaches as a result of these payments. The agency has determined that there is a low risk of the certain circumstances mentioned in the legal advice applying to the department. The agency is not aware of any specific breaches of Section 83 in respect of these items.

During 2012-13, the agency completed a review of possible exposure to risk of non- 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 2013 this work had been completed in respect of all amounts with statutory conditions for payment (representing $25.1m of total expenditure in 2012-13).

The work has identified no issues of non-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	
	2013	2012
	$	$
Departmental		
Expenses	**27,401,183**	29,136,734
Own-source income	**11,559,877**	10,554,544
Net cost of outcome delivery	**15,841,306**	18,582,190

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

	Outcome	
	2013	2012
	$	$
Expenses		
Employees	**17,314,382**	17,917,929
Suppliers	**7,726,220**	8,502,966
Depreciation and amortisation	**2,330,302**	2,542,795
Write-down and impairment of assets	**30,279**	172,509
Other expenses	**-**	535
Total	**27,401,183**	29,136,734
Income		
Revenue from government	**13,498,000**	16,130,000
Sales of goods and services	**7,131,176**	6,715,124
Licence Fees	**4,428,701**	3,839,420
Other	**55,127**	54,250
Total	**25,113,004**	26,738,794
Assets		
Cash and cash equivalents	**999,734**	1,655,881
Trade and other receivables	**1,995,377**	1,610,080
Other financial assets	**113,746**	81,703
Land and buildings	**18,982,031**	19,229,600
Property, plant and equipment	**6,121,867**	6,702,310
Intangibles	**622,129**	798,005
Inventories	**1,437,945**	1,489,587
Other non-financial assets	**350,383**	459,488
Total	**30,623,212**	32,026,654
Liabilities		
Suppliers	**668,277**	1,378,077
Other payables	**1,289,454**	1,821,394
Employee provisions	**4,909,386**	5,228,201
Total	**6,867,117**	8,427,672

Net cost shown include intra-government costs that are eliminated in calculating the actual Budget Outcome.

Note 19: Net Cash Appropriation Arrangements

	2013	2012
	$	$
Total comprehensive income (loss) less depreciation/amortisation expenses previously funded through revenue appropriations *	**551,415**	3,576,140
Plus: depreciation/amortisation expenses previously funded through revenue appropriations		
Depreciation and amortisation expenses	**(2,330,302)**	(2,542,795)
Total comprehensive income (loss) as per the Statement of Comprehensive Income	**(1,778,887)**	1,033,346

* 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.

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Abbreviations

ACDS	Australian Clinical Dosimetry Service
ANRDR	Australian National Radiation Dose Register
ANSTO	Australian Nuclear Science and Technology Organisation
APS	Australian Public Service
ARGOS	Accident Reporting and Guidance Operating System
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASNO	Australian Safeguards and Non-Proliferation Office
BSS	Basic Safety Standards
CEO	Chief Executive Officer
COAG	Council of Australian Governments
CPRs	Commonwealth Procurement Rules
CSIRO	Commonwealth Science and Industrial Research Organisation
CT	computed tomography
CTBT	Comprehensive Nuclear-Test-Ban Treaty
DRLs	diagnostic reference levels
ELF	extremely low frequency
EMF	electric and magnetic fields
EMR	electromagnetic radiation
FMA Act	*Financial Management and Accountability Act 1997*
HIFAR	High-Flux Australian Research Reactor
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IM	information management
IRRS	Integrated Regulatory Review Service
IWS	Interim Waste Store
KPIs	key performance indicators
linac	medical linear accelerator
MODARIA	Modelling and Data for Radiological Impact Assessments (IAEA)
NATA	National Association of Testing Authorities
NDRP	*National Directory for Radiation Protection*
NEWDB	Net Enabled Waste Management Database
NRWMF	National Radioactive Waste Management Facility
NSC	Nuclear Safety Committee
OPAL	Open Pool Australian Ligh-Water reactor
PPSWG	Physical Protection and Security Working Group
PRMS	Personal Radiation Monitoring Service
RANET	Response and Assistance Network (IAEA)
RF EME	radiofrequency electromagnetic energy
RHC	Radiation Health Committee
RPS	Radiation Protection Series
SMC	Strategic Management Committee
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
UPF	ultraviolet protection factor
UVR	ultraviolet radiation
WH&S	Work Health and Safety
WHO	World Health Organization

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.

dosimeter

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.

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

Linacs have numerous applications: they generate x-rays and high energy electrons for medicinal purposes in radiation therapy, serve as particle injectors for higher-energy accelerators, and are used directly to achieve the highest kinetic energy for light particles (electrons and positrons) for particle physics. They can also be used to produce highly penetrating radiation for calibrating radiotherapy dosemeters used in medicine for the treatment of cancer.

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

The process of determining what level of radiation protection and safety makes exposures, and the probability and magnitude of potential exposures, as low as reasonably achievable with economic and societal factors being taken into account.

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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