The Hon. Gabrielle Upton MP
Minister for the Environment
Minister for Local Government
Minister for Heritage

Dear Minister

It is my pleasure to forward to you for presentation to the Parliament of New South Wales the Annual Report of the Radiation Advisory Council for the period 1 July 2017 to 30 June 2018.

This report is prepared in accordance with the provisions of the Radiation Control Act 1990.

Asela Atapattu
Chairperson Radiation Advisory Council
19 October 2018
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Chairperson’s review

The Radiation Advisory Council provides advice to the Minister for the Environment and the Environment Protection Authority (EPA) on technical and policy matters in relation to the management of radiation in NSW. This is within the parameters of the Radiation Control Act 1990 (The Act) and the Radiation Control Regulation 2013.

During the 2017-18 reporting period, the Council saw a change in the chairperson position with the resignation of Mrs Sarah Gardner on 18 January and my appointment on 16 February. The Council also saw the appointments of four new members and the reappointment of five members (Appendix 3). The Council acknowledges the contribution of Mrs Gardner and retiring members of the Council.

During the reporting period, the Council held five meetings and provided the EPA with policy and regulatory advice on the administration of the Act and a wide range of radiation matters.

The Council’s work and activities during the reporting period included:

- a review of, and input into, national codes and standards developed for inclusion in the National Directory for Radiation Protection (NDRP)
- consideration of investigations and incidents arising from the EPA 2017-18 radiation compliance program
- re-establishment of the Council’s Course and Competency Committee to undertake a review of 70 courses approved for radiation user licensing purposes. The Council considered the committee’s progress, specifically the development of licensing competencies for the approval of courses and recommendations pertaining to 12 of the 70 courses reviewed in this period.
- re-establishment of the Council’s Shielding Assessment and Verification Committee. This was to review Radiation Guideline 7: Radiation shielding design assessment and verification requirements. It was also to progress the accreditation of Consulting Radiation Experts (CREs) to certify premises where regulated material is kept or used as compliant with Guideline 7 shielding requirements. The committee completed the review of the guideline and CRE competencies which the Council endorsed at its June meeting.
- a review of the work of Guideline 3 committee specifically the review of Guideline 3: Recommendations for minimum standards and safety requirements for fixed radiation gauges (sealed source devices). The Council endorsed the committee’s recommendation that the guideline be extended to include all sealed source devices.
- keeping itself informed on the implementation of Radiation Guideline 6: Compliance requirements for ionising radiation apparatus used in diagnostic imaging requirements. This was endorsed by the Council in the previous period, specifically the upskilling of CREs that will compliance-test equipment under this guideline.

The Council, through its work plan, continued to focus on its strategic direction 2016-19 objectives, including:

- development of uniform regulatory initiatives through the NDRP by reviewing national codes and standards and identifying regulatory gaps that may need to be addressed

This objective is carried out by the Council through its review and input to NDRP amendments, national codes, standards, recommendations and the EPA radiation compliance and audit programs. Where necessary, the Council provides recommendations to the EPA in relation to any regulatory gaps and may establish committees to investigate projects and address these gaps, such as reviews of guidelines and statutory requirements.
• review and provision of advice to the EPA and the Minister on the remake of the Regulation
• identifying and addressing emerging issues in radiation protection (e.g. new technology)
• identifying procedures and requirements to prevent or minimise dangers arising from the misuse of radiation sources
  The Council’s focus for this objective is on influencing better reporting of radiation accidents through education, emphasising responsiveness and prevention.

During the reporting year, the Council continued to provide advice to the EPA on a wide range of radiation matters including:
• radiation licensing (user and management licences)
• assessment of radiation safety courses for licensing and accreditation purposes
• accreditation of CREs and radiation security assessors
• review of radiation accidents and incidents.

In the year ahead, the Council’s work will focus primarily on:
• review of, and contribution to, national codes and standards in the NDRP and the Radiation Health Committee review of Australia’s radiation regulatory system
• the possible remake of the Regulation
• provision of advice to the EPA on licensing, accreditation, safety courses, and radiation accidents
• development and implementation of an accreditation system for CREs engaged in design and assessment of shielding for premises
• review of the work of the Council’s committees
• participation in the International Atomic Energy Agency’s Integrated Regulatory Review Services Mission to Australia, which will assist the national Radiation Health Committee to ensure that national policies, codes and standards in relation to radiation protection continue to reflect world best practice.

I sincerely wish to thank all members of the Council for their contribution and commitment to radiation safety in NSW.

I would also like to acknowledge the work of EPA staff in supporting the Council.

Asela Atapattu
Chairperson
Radiation Advisory Council
Responsibilities of the Council

The Radiation Advisory Council is established under section 29 of the *Radiation Control Act 1990* (the Act). The Act and the Radiation Control Regulation 2013 (the Regulation) are administered by the Minister for the Environment through the NSW Environment Protection Authority (EPA).

Appendix 1 outlines the objects of the Act.

Annual report of the Council

Section 33(1) of the Act requires that ‘as soon as practicable after 30 June (but on or before 31 December) in each year, the Council is to prepare and forward to the Minister a report of its work and activities for the 12 months ending on 30 June in that year’.

Constitution of the Council

The Council consists of 17 members appointed by the Minister as outlined in Appendix 2.

Functions of the Council

Section 30 of the Act prescribes the functions of the Council, namely:

1. The Council is to advise the Minister on:
   a. proposed amendments to this Act and the making, amendment or repeal of regulations under this Act
   b. the administration of this Act and the regulations
   c. measures to prevent or minimise the dangers arising from radiation
   d. the granting of exemptions authorised by the regulations for periods exceeding 60 days, and
   e. such other matters relating to radiation safety as the Minister considers appropriate.
2. Any such advice may be given either at the request of the Minister or without any such request.
3A. The Council may at any time, and must on the request of the Authority, provide advice to the Authority about licences and accreditations under Part 2 of the Act.
3B. The advice provided to the Authority may be general or specific, as the circumstances require.

3. The Council has such other functions as are conferred or imposed on it by or under this or any other Act.

The EPA exercises responsibilities and powers under the Act and the staff of the EPA Hazardous Materials, Chemicals and Radiation Section provide secretariat support to the Council.
Meetings of the Council

During the reporting period ending 30 June 2018, the Council met on five occasions. The attendances of members at meetings during this period are shown in Appendix 3.

Memorandum of Understanding between the EPA and the Council

The Memorandum of Understanding (MoU) between the EPA and the Council is reviewed every three years. The current MoU was signed by both parties on 30 June 2016 and is provided in Appendix 4.

The Council’s strategic direction

In October 2016 the Council endorsed its strategic direction for 2016–19. The objectives of the Council over these three years will continue to focus on:

- development of uniform regulatory initiatives through the National Directory for Radiation Protection (NDRP) by reviewing national codes and standards and identifying regulatory gaps that may need to be addressed.
- reviewing and providing advice to the Minister on the possible remake of the Regulation.
- identifying and addressing emerging issues in radiation protection (e.g. new technology).
- identifying procedures and requirements to prevent or minimise dangers arising from the misuse of radiation materials.

The Council’s work

During the reporting period, the Council focused on the following matters.

National uniformity

In August 1999 the Australian Health Ministers’ Conference (AHMC) agreed to national uniformity for radiation protection through each jurisdiction’s radiation protection framework.

The Radiation Health Committee (RHC) is responsible for the development of national uniformity for radiation protection in Australia through the National Directory for Radiation Protection (NDRP). The RHC and the development of the NDRP is facilitated by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).
International Atomic Energy Agency (IAEA)- Integrated Regulatory Review Services Mission to Australia

EPA Participation in IAEA Integrated Regulatory Review

During the previous reporting period the EPA informed the Council that it had committed to participating in the International Atomic Energy Agency (IAEA) Integrated Regulatory Review Services (IRRS) Mission to Australia.

The main elements of an IRRS are:

- a self-assessment against the IAEA safety requirements according to a prescribed format
- development of a draft action plan
- drafting of an overarching report to be submitted to the review team (the Advance Reference Material, ARM)
- a mission to Australia in November 2018 to verify the ARM, identify good practices and issue recommendations or suggestions
- a follow-up mission between two and four years after the mission to monitor progress against the recommendations, suggestions and implementation of action plans. The IAEA a IRRS mission to Australia in November 2018 will be led by the Head of the Finnish nuclear regulator.

Participation in the IRRS assists the RHC in fulfilling one of its functions as stated in section 23(d) of the Australian Radiation Protection and Nuclear Safety Act 1998: ‘from time to time, to review national policies, codes and standards in relation to radiation protection to ensure that they continue to substantially reflect world best practice’.
EPA self-assessment against IAEA safety requirements

During the 2017-18 period the EPA undertook the self-assessment in consultation with the EPA Radiation Regulation Unit and two members of the Council, Mr Lee Collins and Dr Richard Smart.

The self-assessment report was submitted to ARPANSA in February 2018. The report demonstrated the efficient and effective regulation of radiation in NSW including:

- a cradle to grave system for regulated materials, which maintains regulatory oversight throughout the life-cycle; and
- a graded approach to the legislative and licensing framework, which regulates radiation sources and practices based on the relative risk.

The self-assessment also identified potential areas where conformance could be improved, including:

- developing templates and procedures to enhance current radiation compliance assurance activities; and
- implementing a common naming convention for recording data and information

A further three areas were identified for consideration, including developing:

- a compliance and enforcement strategy;
- risk-based assessment criteria for radiation regulation priorities; and
- reporting requirements for radiation data to be considered in risk analysis.

The EPA’s self-assessment will be aggregated with the other jurisdictions’ self-assessments to form a single Australian response coordinated by ARPANSA to the IRRS.

The Council at its June 2018 meeting was provided with and considered the EPA self-assessment report and an overview of the EPA action plan, in response to issues identified in the self-assessment report.

The review process is to inform the remake of the Radiation Control Regulation 2013 (see Amendments to radiation legislation).

Radiation Health Committee

During the reporting period, the Council was advised that the RHC met on 15 November 2017 and 14 March 2018 and that Mr Mark Carey, EPA Principal Policy Officer was nominated and appointed as NSW representative to the Radiation Health Committee.

The Council was kept informed of and provided comment on the RHC deliberations and recommendations. Significant issues considered and deemed important during this period were:

The International Commission on Radiological Protection (ICRP) re-evaluation of radon exposures: RHC endorsed a new statement to be published by ARPANSA on occupational and public exposure to radon gas following ICRP re-evaluation of estimates of lung cancer risk for radon progeny.

At its April 2018 meeting, the Council requested further information on the outcomes from the ICRP re-evaluation of radon exposures and risk to exposure in underground mines especially uranium mines and caves. Council raised concerns that underground mining may need increased diligence based on the new proposed requirements. The Council was advised by the NSW RHC member that:

- the ICRP re-evaluated its estimates of lung cancer risk for radon exposure and doubled its estimate of risk from the exposure.
• ARPANSA is preparing to publish a statement to coincide with the publication, particularly as it relates to the Australian context.

• The principle sources of occupational exposure to radon in Australia are underground mines, especially uranium mines, and show caves.

• The EPA will consult with NSW Resources and Energy which administers the Work Health and Safety (Mines and Petroleum Sites) Act 2013; and National Parks and Wildlife Service (NPWS) and Office of Environment and Heritage (OEH), which are responsible for NSW show caves, on the implications of the change.

**Australian National Dose Register:** RHC agreed that the register would be beneficial as a central repository for dose records of occupationally exposed people. However, its implementation is subject to privacy legislation not being compromised, legal issues resolved, and the development of national dosimetry standards. The Council requested further advice on the expansion of the register to cover all occupationally exposed people in Australia. The NSW RHC member informed Council that ARPANSA intends to circulate a draft document regarding minimum accreditation requirements for third-party dosimetry service providers.

**Intense Pulse Light (IPL):** RHC agreed to develop guidance documents in lieu of establishing a case for regulation. The RHC working group has developed three products for targeted consultation and public comment: FAQs for consumers; advice for service providers; and advisory note on the science. Consultation with jurisdictions on providing incident reporting information continues to be challenging. This kind of evidence is essential to underpin any future regulation of IPL. The publications are considered a positive interim measure.

**Draft Code of Practice Radiation Protection Requirements for Industrial Radiography RPS C-4:** The Council considered the draft code at its October 2017 meeting.

**Draft Code for Radiation Protection in Medical Exposure RPS C-5:** The Council considered the document at its April 2018 meeting, noting that the RHC had addressed the Council’s concerns raised in the previous review of the draft code.

**Draft Guide for Radiation Protection in Emergency Exposure Situations RPS G-3:** In November 2017 the RHC agreed to further development of the code to cover training, preparedness, response and transition/termination for radiological incidents, and includes dose limits for responders. In June 2018 the Council considered and provided comment on the draft guide.

**Code of Practice for the Security of Radioactive Sources (2007) RPS 11:** Uniform security background checks - the full implementation of this code pursuant to the Council of Australian Governments (COAG) agreement requires a background checking scheme for people who have certain dealings with security enhanced sources. Jurisdictions have not been able to agree on a framework for a background checking scheme. It was agreed that a RHC project team be established led by the NSW RHC member to work with ARPANSA to progress the issue.

**IAEA revised its Regulations for the Safe Transport of Radioactive Material (SSR-6 2012):** The Australian Code for the Safe Transport of Radioactive Material (RPS C-2 2014), which is adopted directly in clause 36 of the NSW Radiation Control Regulation 2013, was updated to reflect the changes to the international Regulations.
Amendments to radiation legislation

Postponement of automatic repeal of Radiation Control Regulation 2013

At its October 2017 meeting, the Council considered and noted the EPA’s proposal to formally seek postponement of the remake of the Regulation set for automatic repeal on 1 September 2018, pursuant to the Subordinate Legislation Act 1989. The Council noted the EPA proposal in the context of the current IAEA Integrated Regulatory Review of Australian Radiation Protection Framework which will measure the NSW regulatory framework against international best practice and inform future regulatory reform.

Background: The review process involves a thorough consideration of existing legislative, technical and policy issues of a regulatory nature against IAEA safety standards, from which national and state radiation legislation derives. The review will identify areas where NSW has successfully adopted codes and guidelines, where international best practice in radiation protection has been achieved, and where improvements need to be made. This process includes a self-assessment, an IAEA mission, and preparation of a follow-up report. The process will inform the review of the Regulation. A postponement of staged repeal was requested by the EPA while the review takes place.

On 29 January 2018 the Minister sought approval from the NSW Premier, Gladys Berejiklian to postpone the remake of the Regulation to 1 September 2019.

Radiation Control Amendment (Fees) Regulation 2018

At its October 2017 meeting, the Council considered the proposal from the EPA to amend the Regulation to extend fees beyond 30 June 2018 (as the fees prescribed in the Regulation expire on 30 June 2018). It also considered the proposal of linking fees to the NSW public sector wage price index, replacing annual fees schedules.

At its June 2018 meeting, the Council was informed that the Radiation Control Amendment (Fees) Regulation was gazetted on 8 June, with provisions of fees commencing on 1 July 2018:

The Radiation Control Amendment (Fees) Regulation 2018 amends the Regulation:

- to increase fees payable in connection with the administration of the Radiation Control Act; and
- to provide a mechanism for the future automatic adjustment for inflation of those fees.

The fee increases effected by this amendment are generally in line with movements in the Public Sector Wage Price Index.

EPA radiation compliance program

During the reporting period, the Council considered and was provided with advice from the EPA on the following matters:

- EPA work program 2016-17 achievements
- EPA compliance program 2017-18
• Prosecution of Global Medical Solutions (GMS) - illegal disposal of regulated material without EPA consent - In the previous period the Council was informed that GMS, a company that manufactures and distributes radiopharmaceuticals for nuclear medicine purposes, disposed of a radioactive substance (Iodine 131) in its general waste bin on or about 16 February 2016. Shortly after, Lucas Heights Resource Recovery Park reported the detection of radioactive materials inside the semi-trailer transporting the waste. The EPA’s investigation resulted in GMS pleading guilty to the offence and on 28 September 2017 was fined $6,000 and convicted of the illegal disposal of regulated material without EPA consent.

• Hearing set for prosecution of Australian Aged Dental Care Pty Ltd - failing to ensure that regulated material is used by a person holding an appropriate licence - The EPA informed the Council that the hearing date for the EPA vs Australian Aged Dental Care, a mobile dental service provider which operates at schools and aged care facilities, was set for 16 July 2018. Australian Aged Dental Care Pty Ltd was being prosecuted for several offences of failing to ensure that regulated material in the form of an orthopantomogram (X-ray apparatus) is only used by a person holding an appropriate licence.

• Investigation of whether orthovoltage apparatus at Orange Hospital was correctly calibrated - In the previous period the Council was informed that the EPA issued a notice to Western NSW Local Health District (WLHD) Orange Hospital, to provide orthovoltage apparatus commissioning measurements and analysis and copies of all planning data used for orthovoltage treatment planning. The EPA was investigating whether the apparatus had been correctly calibrated. During this reporting period, the Council was that the EPA had initiated an independent assessment of the documents and data to assess if any significant under or overdosing of patients may have occurred. The results of these investigations were reviewed at the Council’s October 2017 and April 2018 meetings. While the data identified a systemic error of 6-8%, Council agreed with the recommendations of the independent assessor that this level of error would not result in any significant under or overdosing of patients. This advice was provided to WHLD by the EPA.

• $1,500 fine issued to Mr Subaki for providing cosmetic tanning service for a fee – in November 2017 the EPA issued a penalty notice for illegal operation of solaria tanning unit in the Liverpool CBD. Commercial cosmetic tanning services were banned in NSW in 2014 under the Regulation. The solaria ban came in response to Australian research that found a strong link between use of UV tanning units and early-onset melanoma. The EPA issued Mr Subaki with a $1500 fine for providing a cosmetic tanning service for a fee or reward and issued an official caution to the company.

• EPA presentation to the Council- Audit of Fixed Radiation Gauges in NSW Mines – At its June 2018 meeting the EPA provided the Council with a presentation on the outcomes from the EPA inspection of Fixed Radiation Gauges (sealed source devices) at mine sites in NSW. The Council requested that the role of the EPA, Consulting Radiation Experts and licensees needed to be clarified within the regulated community. The EPA agreed to provide the Council with a paper on the matter at its August 2018 meeting.
Council advice to the EPA on other radiation matters

During the current reporting period, the Council continued to provide advice to the EPA in relation to radiation and general matters, including:

- non-standard licensing applications
- acceptance of radiation safety courses for the purposes of licensing
- non-standard accreditation applications
- radiation accidents and incidents.

Committees of the Council

Under section 31 of the Act, the Council can establish committees to help it perform its functions. In 2017-18, the Council had five committees.

- National Directory Committee
- Course and Competency Committee
- Shielding Assessment and Verification Committee (including review of Guideline 7)
- Guideline 3 Review Committee
- Guideline 6 Review Committee

The roles and work of each of the Council’s committees are outlined below. Membership details of the Council’s committees are provided in Appendix 5.

National Directory Committee

The Council established the National Directory Committee to help it develop and implement the National Directory for Radiation Protection (NDRP). It was also to ensure that the recommendations proposed by the national Radiation Health Committee (RHC) are practical and effective in controlling radiation risks to human health and the environment.

The RHC advises the CEO of ARPANSA and the Radiation Health and Safety Advisory Council on matters relating to radiation protection. This includes formulating draft national policies, codes and standards for consideration by the Australian, state and territory governments.

The committee’s role is to provide advice to the Council and the EPA on the priorities and suitability of material proposed for inclusion in the NDRP. It also advises on its legislative, financial and operational impact on the EPA, other NSW Government agencies and NSW. The committee reviews documents that are produced by the RHC.

The committee did not meet during the reporting period as specific issues arising from the RHC were considered directly by the Council.

Course and Competency Committee

At its October 2017 meeting, the Council re-established the Course and Competency Committee (CCC) to undertake a periodical review of all radiation safety courses approved by the EPA for licensing radiation users.
During 2017-18 the Council endorsed the committee’s membership and terms of reference. The committee is to carry out this work by:

- providing advice to the Council on proposed licensing requirements, in particular, to review/determine generic attributes and competencies for each licence condition.
- reviewing generic advice provided to course providers.
- reviewing and recommending to the Council courses for approval or modification within the parameters endorsed by the Council.
- providing advice to the Council on the frequency of future reviews.
- making recommendations to Council of its own accord on emerging issues, technical developments, regulatory matters or policy development relating to suitability of or necessity for approved courses.

On the recommendation of the Council, the EPA advised 50 course providers of the review and the requirement for them to submit their courses should they want them approved for user licensing purposes. The Council noted that 32 course providers from the 49 who responded submitted 70 courses for review.

During the current reporting period, the Committee met on three occasions and made the following progress:

- determined generic attributes and competencies for each licence category.
- started review of generic advice to course providers.
- reviewed and approved 12 courses.

In the next period the Council will consider the committee’s recommendations regarding the review of the remaining courses.

**Shielding Assessment and Verification Committee**

At its August 2017 meeting, the Council reconvened the Shielding Assessment and Verification Committee (SAVC), on request of the EPA. This was to progress the accreditation of Consulting Radiation Experts (CREs) to certify premises where regulated material is kept or used as compliant with shielding requirements (*Radiation Guideline 7: Radiation shielding design assessment and verification requirements*).

Background: In 2009 the Council’s SAVC drafted the *Radiation Guideline 7* and the EPA published it in the same year as a non-mandatory document. The EPA approached the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) to provide training and to develop an accreditation program for CREs to be accredited in shielding for medical premises. In 2010 the ACPSEM agreed to develop a training and accreditation program for CREs. Due to administration changes within the ACPSEM the accreditation program was not progressed.

The committee is to carry out this work by:

- reviewing *Radiation Guideline 7: Radiation shielding design assessment and verification requirements*
- reviewing CRE competencies (approved by the RAC in 2010) and developing assessments for the accreditation of CREs (premises shielding).
- reviewing licensing and accreditation conditions.
- assessing CRE accreditation applications for premises shielding.
During the reporting period 2017-18, the Committee met on six occasions and finalised the review of Guideline 7 and competencies for the accreditation of CREs assessing shielding in NSW premises.

At its June 2018 meeting, the Council endorsed the revised Radiation Guideline 7 and CRE competencies. It is intended that the guideline be edited, published and released for public comment in the next period.

Also in the next period, the Council will consider the committee’s recommendations regarding the feedback on the guideline from the public consultation process; licensing and accreditation conditions and CRE assessments.

Guideline 3 Review Committee

At its December 2016 meeting, the Council established the Guideline 3 Review Committee to review Radiation Guideline 3: Recommendations for minimum standards and safety requirements for fixed radiation gauges (sealed source devices). The Council endorsed the committee’s terms of reference at its February 2017 meeting. The committee is to achieve its work by:

- reviewing the existing guideline requirements
- identifying and determining content of the guideline
- consulting with CREs and stakeholders
- reviewing all relevant codes and standards
- submitting a draft revised guideline for the Council’s consideration.

During the reporting period 2017-18, the Committee met on three occasions and started work on the draft guideline. The Council agreed that the guideline be extended to include all sealed source devices (SSDs) for industrial applications. The committee informed the Council that a draft guideline will be finalised for the Council’s review in the next period.

Guideline 6 Review Committee


The guideline was reviewed to incorporate new technology and to align the requirements of the guideline with the Act. In 2015-16 the committee finalised the review of the guideline and the Council endorsed it for the EPA to progress.

The revised guideline Radiation Guideline 6: Compliance requirements for ionising radiation apparatus used in diagnostic imaging consists of the following six parts:

- **Part 1: Mammography**
- **Part 2: Radiography (medical) and bone mineral densitometry**
- **Part 3: Dentistry (including maxillofacial)**
- **Part 4: Fluoroscopy**
- **Part 5: Computed tomography**
- **Part 6: Veterinary science (radiography and fluoroscopy)**.

During 2016-17 the committee, in conjunction with the EPA and key stakeholders, considered extra training requirements for Consulting Radiation Experts (CREs) to carry out new assessment requirements under the revised guideline. The Council in the same period endorsed the EPA seminar to upskill CREs.
During the period 2017-18 the committee did not meet as the Council continued to oversee the upskilling of CREs who will eventually be undertaking the compliance-testing of equipment under this guideline.

At its June 2018 meeting, the Council was informed by the EPA that it was doing an analysis on the implementation costs of the guideline.

**Licensing and accreditation**

The EPA, under Part 2 of the Act, is the authority responsible for administering radiation user and management licences and accreditation of consulting radiation experts and radiation security assessors. Under section 30 of the Act, the Council may give generic or specific advice to the EPA on applications.

The Council’s standing advice is considered by the EPA for all applications submitted to it under the Act. The Council and the EPA work together on determining the outcomes of applications, as set out in the MoU between the Council and the EPA (see Appendix 4).

During the reporting period, the Council:

- considered and reviewed licensing and accreditation statistics reports provided by the EPA at each of its meetings
- was informed that the EPA’s online licence applications system (E-connect) was updated in May 2018 to enable applicants to apply for radiation management licences and licensees to renew their management licences.

**Summary of licences and accreditations issued by the EPA**

Table 1 summarises the total number of radiation licences and accreditations issued by the EPA at 30 June 2018.

**Table 1: Active licences and accreditations at 30 June 2018**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
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</thead>
<tbody>
<tr>
<td>Licence to use regulated material</td>
<td>14,722</td>
</tr>
<tr>
<td>Management licences (general)</td>
<td>2,582</td>
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<tr>
<td>Management licences (sell only)</td>
<td>122</td>
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<tr>
<td>Accredited consulting radiation experts</td>
<td>93</td>
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<tr>
<td>Accredited radiation security assessors</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total radiation licences and accreditations</strong></td>
<td><strong>17,525</strong></td>
</tr>
</tbody>
</table>

**Radiation user licences**

The Act, under Section 7, requires a natural person who intends to use regulated material to hold a radiation user licence and comply with any conditions the licence is subject to.

‘Regulated material’ means any of the following: radioactive substances, ionising radiation apparatus, non-ionising radiation apparatus of a kind prescribed by the regulations and sealed source devices.
Purpose of a radiation user licence

The aim of a user licence is to:

- regulate, restrict or prohibit the use of regulated material
- ensure that those who use regulated material:
  - are fit and proper persons
  - have appropriate knowledge of the principles and practices of radiation safety and protection applicable to the activities proposed to be carried out
  - protect the NSW community and the environment from harmful exposure to radiation through the application of conditions of licence that restrict how, when and where radiation may be used.

Occupations requiring a radiation user licence

Radiation user licences are held by individuals who work across a wide range of occupations in NSW, such as scientists, medical specialists, nurses, radiographers, industrial radiographers, service engineers, technologists, dentists, chiropractors, veterinarians and tertiary lecturers.

Number of user licences issued by the EPA

During the reporting period ending 30 June 2018, the EPA issued 2,448 radiation user licences and renewed 5,956 user licences. At the end of the reporting period, there was a total of 14,722 active radiation user licences (4,615 one-year licences and 10,107 three-year licences) administered by the EPA.

Council’s advice to the EPA

During the reporting period, the Council gave the EPA specific expert advice regarding radiation safety and licensing requirements across a wide range of occupational areas that use radiation.

Non-standard licence conditions

The Council:

- reviewed and endorsed five non-standard licence applications.
- refused approval for a licence variation application to include a licence to use radiation apparatus for medical fluoroscopy (specialists other than radiologists) IA22, as the applicant did not have the experience or qualify as a medical specialist.

Radiation user licence criteria and conditions

During the reporting period the Council:

- revised and endorsed the Council’s radioactive substance threshold (to 20 Gbq) for standard licence conditions:
  - use sealed source devices (portable X-ray fluorescence (XRF) analysers (S19)
  - use radioactive substances for industrial gauging (S7)
- reviewed and noted the EPA’s advice to Cancer Institute NSW. The EPA had assessed the level of supervision provided to mammography students undertaking the Charles Sturt University Diploma (placed with BreastScreen Australia as part of course requirements) and confirmed that the level of supervision satisfies the ‘immediate supervision’ requirement under the Regulation.
• provided advice to the EPA on the management of Radium-223 as a Pharmaceutical Benefits Scheme (PBS) item for therapeutic treatment of prostate cancer. The Council noted the EPA’s advice to PBS (which was seeking each jurisdiction’s views on how the drug could be managed under a PBS arrangement). Advice included:

➢ delivery of the Radium-223 should be to nuclear medicine practices in the same manner as other nuclear medicine radiopharmaceuticals are currently delivered

➢ Radium-223 must be administered by a licensed nuclear medicine physician or technologist or someone who has approval for licence exemption to do such injections


➢ that no additional licensing requirements are needed by nuclear medicine sites or existing licence holders in relation to the ordering and handling of Radium-223 through pharmacies.

➢ a holder of a radiation management licence is permitted to buy a radioactive substance such as Radium-223. A pharmacy will not be able to buy Radium-223 unless covered by a radiation management licence.

• endorsed a new licence condition to use radiation apparatus for human imaging for security screening purposes (IA42). This was following an application submitted by Corrective Services seeking to install full body X-ray scanning equipment in two correctional centres in NSW:

IA42 Use for human imaging for security screening purposes
For the IA42 condition the licensee must only use whole body X-ray:
1. for human imaging for security screen purposes
2. on persons 18 years and over who are aware they are not pregnant
3. once consent for the security screening has been given.
4. Where the maximum dose per scan is no greater than 0.0045 mSv.
5. Where a person does not get exposed annually to greater than 150 scans or 1.0 mSv whichever occurs first.

• considered and approved the use of handheld X-ray scanner Heuresis HBI-120 backscatter imager upon completion of Bartolo Safety Management Service, The Safe Use of Portable X-ray Apparatus for the Detection of Concealed Items (Security) and subject to a backscatter radiation shielding being required on all apparatus sold. The Council also amended the licence condition to use radiation apparatus for detection of concealed items (IA41):

IA41 - Use radiation apparatus for detection of concealed item
For the IA41 condition the licensee must only use:
1. radiation apparatus for the detection of concealed items.
2. radiation apparatus operating up to a maximum of 150 kVp at 6 mA.

• approved the Australian Radiation Protection Accreditation Board (ARPAB) certification for licensing individuals to use radiation apparatus, while undertaking the duties of a radiation safety officer (IA18, S18A).

• approved the revised licence condition (IA23RO) to use radioactive substances for veterinary radiation oncology purposes and the criteria to ensure animal specialist oncology facility practices are appropriately regulated.
• approved amendment to the criteria for gaining a licence to use radiation apparatus (dual energy X-ray absorptiometry) for bone mineral or body composition analysis (IA27 and IA27S). As individuals need to be registered with the Australian Health Practitioner Regulation Agency (AHPRA) and the criteria requirement ‘to be eligible for membership to the Bone Mineral Society’ no longer applies.

• approved amendment to the wording of a licence to use sealed source devices for industrial gauging (S7) to clarify that the licensee must not handle or remove radioactive substances contained in the sealed source device:

S7: Use sealed source devices for industrial gauging

For S7 the licensee must:

1. only use a sealed source device for the purpose of industrial gauging.
2. not handle or remove radioactive substances contained in the sealed source device.
3. only use a sealed source device that contains radioactive substances of the form, type and activity in the schedule(s) attached to this licence.

**Radiation safety courses**

The Council approved the following radiation safety courses for licensing:

• Hologic (Australia) Pty Ltd: *Hologic Radiation Awareness for Dual Energy E-Ray Absorptiometry (DEXA)* operations for the purpose of licensing individuals to use radiation apparatus (dual energy X-ray absorptiometry) for bone mineral or body composition analysis (IA27/IA27S).

• Bartolo Safety Management Services: *The safe Use of Portable X-ray Apparatus for the Detection of Concealed Items (Security)* for the purpose of licensing individuals to use radiation apparatus for detection of concealed items (IA41). The Council considered the course at its October and December 2017 meetings, requesting amendments to the course prior to approval by the EPA. The EPA approved the amended course in February 2018.

• SA Radiation Pty Ltd: Radiation Safety – *Fixed gauges (sources and X-rays)* for the purpose of licensing individuals to use sealed source devices for industrial gauging (S7).

The Council endorsed the following courses based on its standing advice to the EPA that courses approved in another jurisdiction for similar NSW licensing purposes, once verified, be approved:

• Corporate Risk Solutions Pty Ltd and David Leslie – *Radiation Safety and Soter RS Operator Course* for the purpose of licensing to use for human imaging for security screening purposes (IA42).

• Scott Automation and Robotics: *Radiation Safety and Cabinet X-ray Machines* be approved for the purposes of licensing individuals to use radiation apparatus for installing and/or servicing radiation apparatus (IA10).

• OMR Partners Pty Ltd – *Cone Beam CT applications course* for the purpose of licensing individuals to use cone beam computed tomography for dental radiography (IA24).
The Council considered the following radiation safety courses for licensing and recommended that further information/inclusions be provided prior to the courses being considered for user licensing purposes:

- SGS Australia Pty Ltd:
  - Radiation Safety and X-Ray Analysis Systems (XRF-XRD)
  - Radiation Safety & Fixed Gauges
  - Radiation Safety & Unsealed sources in the Laboratory
  - Radiation Safety and Cabinet X-ray System
- AXT Pty Ltd – X-Ray Radiation Safety & Hand-Held X-Ray User Course

At the time of writing this report the Council had not received the recommended changes.

**Radiation management licences**

**Requirement for management licences**

Under section 6 of the Act, persons responsible for the regulated material are required to hold a radiation management licence and comply with conditions of the licence.

There are two types of management licences issued by the EPA: one to own, store, give away, sell and possess regulated material (valid for one year) and the other only for selling regulated material (valid for either one or three years).

**Persons responsible for regulated material**

Persons responsible for regulated material are owners of regulated material, persons storing, selling or giving away regulated material and persons in possession of regulated material, other than:

- a person who is the holder of a radiation user licence in respect of the regulated material and who has possession of the regulated material only for the purposes of using it, or
- a person who has possession of the regulated material only for the purposes of transporting it.

**Purpose of management licences**

Radiation management licences are used to regulate, restrict or prohibit the possession, sale, storage, giving away and disposal of regulated material. This is to protect people and the environment from exposure to radiation.

**Number of management licences issued by the EPA**

During the reporting period ending 30 June 2018, the Council was advised that the EPA issued 360 general management licences and 15 sell-only management licences. At the end of the reporting period, there was a total of 2,704 management licences (2,582 general and 122 sell-only) issued by the EPA.

**Council’s advice to the EPA**

During the current reporting period, the Council considered and noted:

- South Western Sydney Local Health District report on the first three months of operation (May- August 2017) of the medical cyclotron and radioisotope laboratory at Liverpool Hospital.
• the Royal Prince Alfred Hospital's cyclotron and radiopharmaceutical production unit report for January - December 2017.

Consulting radiation experts

Accreditation and activities of consulting radiation experts

Section 8(1) of the Act provides for the accreditation of consulting radiation experts (CREs). The Regulation sets out the activities of a CRE, which include:

(a) advising on the design of premises, in relation to radiation safety requirements, on which regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence
(b) assessing plans for premises on which regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence
(c) assessing any regulated material and the premises at which it is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence
(d) assessing the integrity of any shielding of premises at which any regulated material is kept or used, for the purposes of certifying compliance with any conditions imposed on a radiation management licence.

Purpose of accrediting consulting radiation experts

CREs are accredited by the EPA to assess apparatus and/or premises and issue a certificate of compliance verifying that they comply with the requirements of licensing.

Council’s advice to the EPA

Section 9A of the Act states that the EPA may seek the Council's advice on accreditation matters. During the reporting period ending 30 June 2018, the Council:

• endorsed accreditation conditions for CREs assessing diagnostic imaging accreditation conditions to align with the new requirements of Guideline 6 (see Guideline 6 Review Committee)
• recommended that an applicant seeking to be accredited as a CRE assessing dental equipment undergo an independent assessment by a CRE selected by the EPA. The applicant underwent an independent assessment and was granted accreditation.

Number of CREs accredited by the EPA

At 30 June 2018, the EPA had a total of 93 accredited CREs.

Radiation security assessors

Accreditation and activities of radiation security assessors

Section 8(2) of the Act provides for the accreditation of radiation security assessors. The activities of a radiation security assessor, as prescribed in clause 13 of the Regulation, are:

• reviewing security plans or amended security plans to assess whether the plans are made or amended in accordance with the Act
endorsing security plans so that the plan, or the plan as amended, satisfies the requirements of the Act.

**Purpose of accrediting radiation security assessors**

The purpose of accrediting radiation security assessors is to ensure that those responsible for security-enhanced sources prepare source security plans and source transport security plans in accordance with the requirement of the Act. A sealed radioactive source (or an aggregation of sealed radioactive sources) that is a Category 1, 2 or 3 is a ‘security-enhanced source’ for the purposes of the Act.

**Number of radiation security assessors accredited by the EPA**

At 30 June 2018, the EPA had accredited a total of six radiation security assessors.

**Radiation accidents**

**Mandatory requirement to report radiation accidents**

The mandatory requirements imposed on persons responsible for regulated material for the reporting and recording of radiation accidents are outlined in clauses 38 and 39 of the Regulation. The types of incidents classified as radiation accidents are outlined in clause 37 of the Regulation.

Under the Memorandum of Understanding between the EPA and the Council, the Council agrees to review accidents/incidents reported to the EPA.

Each year the Council’s emphasis is that it is vital that accidents are consistently reported, even if the radiation dose received has been negligible. This is not because of the legal requirement, but because the knowledge gained from accidents can be used to develop processes and procedures that reduce the risk of similar accidents reoccurring. Most reported accidents do not result in any actual harm to an individual.

**Causes of radiation accidents**

Radiation accidents are normally caused by either a deficiency in the management system or failure on the part of individuals to implement those systems correctly. Where investigations reveal that accidents have been caused by a deficiency in the management system, the Council may recommend the development and implementation of new procedures or that specific regulatory action is taken. Where an individual is at fault, the Council may (if this has not been done by the organisation) recommend counselling or further training to prevent this type of incident from reoccurring.

**Serious accidents reported to the Health Care Complaints Commission**

The Council may recommend the referral of serious health-related accidents to the Health Care Complaints Commission (HCCC). The EPA has standing advice from the Council to refer all matters considered significant by the Council to the HCCC.
Number of accidents reported to the EPA

During the reporting period ending 30 June 2018, the Council considered 105 instances involving 119 people where accidents involving doses over 1 milliSievert (mSv) may have occurred.

The Council also considered 34 incidents involving 35 people that involved doses of less than 1 mSv. The increase in the number of accidents reported under 1 mSv can be attributed to changes in the reporting requirements under the Act.

The Council considered each case and, where appropriate, made recommendations that, in its opinion, would reduce the risk of a recurrence.

During the reporting period the Council also:

➢ considered the Australian Radiation Incident Register Annual Report 1 January 2016 to 31 December 2016 and acknowledged that the document could be used by the EPA in radiation awareness programs.

➢ requested that the EPA provide the Council with warning and show cause notices in addition to penalty notices. The EPA agreed to provide this to the Council as they arise.

Summary of radiation accidents considered by the Council in 2017-18

Table 2 provides a summary of the types of accidents reported to the EPA in the specific categories of nuclear medicine, therapy, radiology and other, reviewed by the Council in 2017-18. This does not include incidents that involved doses less than 1 mSv.

Table 2: Summary of causes of radiation accidents (> 1 mSv) reported in 2017–18

<table>
<thead>
<tr>
<th>Type of accident</th>
<th>Accident group categories</th>
<th>Nuclear medicine</th>
<th>Therapy</th>
<th>Radiology</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient notes/plans/requests not interpreted/read/checked correctly</td>
<td></td>
<td>5</td>
<td>0</td>
<td>18</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Incorrect isotope selected and drawn up</td>
<td></td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Incorrect isotope drawn up by a supplier</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Equipment/software failure</td>
<td></td>
<td>11</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Booking/request error</td>
<td>Incorrect procedure requested for the right patient</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Failure to cancel booking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Booking request not amended with new scan requested</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Same examination repeated</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Wrong patient name entered on request form</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Radiopharmaceutical not administered correctly (injection into cannula)</td>
<td></td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Operator error (CTs, PET/CT)</td>
<td></td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Physiology (failure of radiopharmaceutical)</td>
<td></td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Calculation error</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Protocols not followed (scan ordered before diagnostic MRI received; inadequate handover; unauthorised person incorrectly completed request) | 0 | 1 | 7 | 0 | 8
Patient ID not checked | 1 | 0 | 6 | 0 | 7
Industrial/other | 0 | - | - | - | 0
Total number of reported accidents | 48 | 3 | 54 | 0 | 105

Note: In the previous reporting period, the types of accidents included wrong anatomy X-rayed, radiation oncology wrong area treated and contamination with radioactive material. In this period these types of accidents are included under the existing categories.

Table 3 provides the number of accidents reported in the last five-year period in the categories of nuclear medicine, therapy, radiology and other. This does not include incidents that involved doses less than 1 mSv.

**Table 3: Accidents (> 1 mSv) reported to the Council by category between 2013 and 2018**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear medicine</td>
<td>19</td>
<td>17</td>
<td>38</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Therapy</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Radiology</td>
<td>16</td>
<td>15</td>
<td>24</td>
<td>23</td>
<td>54</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>41</td>
<td>39</td>
<td>70</td>
<td>60</td>
<td>105</td>
</tr>
</tbody>
</table>

The higher number of accidents reported is the result of EPA regulatory initiatives.
Appendix 1: Objects of the Act

Section 3 of the Act prescribes the objects of the Act as follows:

(a) to secure the protection of persons and the environment from exposure to ionising and harmful non-ionising radiation to the maximum extent that is reasonably practicable, taking into account social and economic factors and recognising the need for the use of radiation for beneficial purposes

(b) to protect security-enhanced sources from misuse that may result in harm to people or the environment

(c) to promote the radiation protection principles.

The radiation protection principles are as follows:

(a) justification of a practice by assessing that the benefits of the practice involving exposure to ionising radiation outweigh any detriment

(b) optimisation of protection by ensuring that each of the following is kept as low as reasonably achievable, taking into account economic and social factors:
   (i) the magnitude of individual doses of ionising radiation
   (ii) the number of people exposed to ionising radiation
   (iii) the likelihood of exposure to ionising radiation.

(c) dose and risk limitation by setting dose limits or imposing other measures so that the health risk to any person exposed to ionising radiation is kept below levels that are generally considered to be unacceptable.

A person is to take the radiation protection principles into consideration when exercising functions under this Act or under a licence.
Appendix 2: Constitution of the Council

The Council consists of 17 members appointed by the Minister:

(a)  the Chairperson of the Authority or a member of staff of the Authority, who is to be the Chairperson of the Council
(b)  a medical practitioner who is a specialist in radiology
(c)  a radiographer with expertise in the field of human diagnostic radiography
(d)  a person with expertise in the industrial uses of radiation
(e)  a person with expertise in health physics
(f)  a medical practitioner who specialises in nuclear medicine
(g)  a person with expertise in non-ionising radiation
(h)  a person with expertise in work health and safety
(i)  a person who is an Australian lawyer of at least seven years standing
(j)  a person who represents community interests
(k)  a person nominated by the Secretary of the Ministry of Health
(l)  a radiation oncologist
(m)  a medical physicist
(n)  a person nominated by the Secretary of the Department of Finance, Services and Innovation and who is employed in the part of the Department that is principally involved in the administration of the [Work Health and Safety Act 2011](https://www.gov.au/work-health-and-safety)
(o)  a person with expertise in naturally occurring radioactivity
(o1) a person with expertise in mine radiation safety
(p)  a person chosen by the Minister for such reasons as the Minister thinks fit.
### Appendix 3: Membership and attendance at Council meetings in 2017-18

<table>
<thead>
<tr>
<th>Member</th>
<th>Appointed position</th>
<th>Meetings attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Asela Atapattu (appointed 16/2/2018) Ms Sarah Gardner (resigned 18/1/2018)</td>
<td>Chairperson</td>
<td>5</td>
</tr>
<tr>
<td>Mr Andrew Battye (appointed 16/2/2018)</td>
<td>Person nominated by the Secretary of the Department of Finance, Services and Innovation involved in the administration of the <em>Work Health and Safety Act 2011</em></td>
<td>2</td>
</tr>
<tr>
<td>Mr Glen Burt (reappointed 22/1/2016)</td>
<td>Radiographer with expertise in the field of human diagnostic radiography</td>
<td>5</td>
</tr>
<tr>
<td>Assoc. Prof. Lee Collins AM (reappointed 1/12/2017)</td>
<td>Person with expertise in non-ionising radiation</td>
<td>5</td>
</tr>
<tr>
<td>Dr Hugh Dixon (reappointed 16/1/2016)</td>
<td>Medical practitioner who specialises in nuclear medicine</td>
<td>4</td>
</tr>
<tr>
<td>Dr Mary Dwyer (reappointed 22/1/2016)</td>
<td>Radiation oncologist</td>
<td>4</td>
</tr>
<tr>
<td>Mr Frank Galea (reappointed 1/12/2017)</td>
<td>Person with expertise in the industrial uses of radiation</td>
<td>5</td>
</tr>
<tr>
<td>Ms Fiona Henderson (reappointed 1/12/2018)</td>
<td>Person who is an Australian lawyer of at least seven years standing</td>
<td>5</td>
</tr>
<tr>
<td>Ms Leann Houston (appointed 16/2/2018) Ms Elizabeth Bailey (term expired 30/11/2017)</td>
<td>Person chosen by the Minister</td>
<td>2</td>
</tr>
<tr>
<td>Mr Cameron Jeffries (reappointed 1/12/2017)</td>
<td>Person with expertise in naturally occurring radioactivity</td>
<td>5</td>
</tr>
<tr>
<td>Ms Kate Lloyd (appointed 16/2/2018) Dr Daniel Comerford (resigned 11/8/2017)</td>
<td>Person nominated by the Secretary of the Ministry of Health</td>
<td>1</td>
</tr>
<tr>
<td>Ms Kelly Lovely (appointed 19/12/16)</td>
<td>Person with expertise in work health and safety</td>
<td>2</td>
</tr>
<tr>
<td>Mr Robert McLaughlin (reappointed 22/1/2016)</td>
<td>Person with expertise in mine radiation safety</td>
<td>4</td>
</tr>
<tr>
<td>Ms Joanne Muller (appointed 16/2/2018) Ms Elizabeth Akmentins (term expired 30/11/2017)</td>
<td>Person who represents community interests</td>
<td>4</td>
</tr>
<tr>
<td>Dr Philip Pasfield (reappointed 22/1/2016)</td>
<td>Medical practitioner who is a specialist in radiology</td>
<td>3</td>
</tr>
<tr>
<td>Mr Brent Rogers (reappointed 19/12/2016)</td>
<td>Person with expertise in health physics</td>
<td>5</td>
</tr>
<tr>
<td>Dr Richard Smart (reappointed 1/12/2017)</td>
<td>Medical physicist</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix 4: Memorandum of Understanding between the EPA and the Council

Statement of Common Intent

This Memorandum of Understanding (MoU) has been agreed between the NSW Environment Protection Authority (EPA) and the Radiation Advisory Council (the Council) to document the practical aspects of the way that each will work with the other to advance radiation safety in NSW. The EPA provides administrative support to the Council.

Both the Council and the EPA are committed to a cooperative and collaborative partnership with the aim of advancing the objectives of the Radiation Control Act 1990 (the Act). This MoU shall be reviewed every three years and remain in force until such time as both parties agree otherwise.

The roles and responsibilities for each body are set out in the Act. Fundamentally, the Council provides expert advice to the EPA and the Minister across all radiation safety matters, while the EPA has responsibility for administering the regulatory functions provided by the Act. This MoU includes an agreement on how advice from the Council will be used by the EPA in the details of issuing licences and accreditations.

The Council also has a key role in helping the EPA to develop radiation safety policy for NSW. The EPA has responsibility for formally adopting and giving effect to such policies. The EPA must also take into account NSW Government policy, any direction from the Minister and other advice it receives in developing and implementing policy. In recognition of the Council’s special expertise, the EPA will engage openly, early and in detail with the Council in the development of radiation safety policy matters.

Agreed details of how the Council and the EPA collaborate

1. Development of regulatory guidelines and policies

The EPA will provide the Council with drafts of any new or amended guidelines, policies or standards that are developed or reviewed by the EPA or other external bodies.

The EPA will seek the formal advice of the Council at each stage in the process of the development of these guidelines, policies and standards. This consultation will include the results of any feedback from community consultations. The Council will also be formally asked to consider endorsing the final products of the development of guidelines, policies and standards.

2. Provision of advice from the Council to the Minister

Section 30 of the Act gives the functions of the Council in relation to provision of advice to the Minister.

1. The Council is to advise the Minister on:
   (a) proposed amendments to this Act and the making, amendment or repeal of regulations under this Act,
   (b) administration of this Act and the regulations,
   (c) measures to prevent or minimise the dangers arising from radiation,
   (d) the granting of exemptions authorised by the regulations for periods exceeding 60 days,
   (e) such other matters relating to radiation safety as the Minister considers appropriate.
2. Any such advice may be given either at the request of the Minister or without any such request.

The Council may also provide advice to the EPA from time to time, as it sees fit and on issues that it considers of relevance, at the request of the EPA or of its own accord.

3. Correspondence

When requested by the Council to prepare correspondence on its behalf, the EPA will present a draft of the correspondence for comment. After amendments to the draft have been prepared in light of the comments offered by the Council, the EPA will submit a final version for endorsement before it is signed by the Chairperson of the Council.

The time frames for the preparation of drafts and presentation of final versions of correspondence for endorsement by the Council will be managed by the EPA to accommodate the workload of the Hazardous Materials, Chemicals and Radiation Section at the time.

Finalised correspondence which has been mailed out, and correspondence received, will be tabled by the EPA at the next Council meeting, subject to the deadlines for submission of business papers for that meeting.

4. Storage of documents

Records of meetings, including agendas, minutes and all associated documents, are kept by the EPA. These records will, as far as is possible, be kept in electronic format and will be made available to the members of the Council upon request to the EPA in a timely manner.

5. Provision of secretariat support

The EPA will provide secretariat support to the Council and all its committees. This support will include:

- preparation of agendas for meetings of the Council and committees and their distribution to Council members
- taking of minutes and their distribution to members
- preparation of any correspondence requested by the Council.

6. Development of procedures

The EPA and the Council will further develop the system of generic advice for applications to the EPA for licences and accreditations and the EPA will continue to refer applications not covered by the generic advice to the Council. The EPA will also seek the advice of the Council regarding radiation accidents and incidents and their investigation, and the assessment of radiation safety courses.

The EPA will seek active input from the Council on strategic and policy matters. These will include substantive input on any review or development of legislation, with emphasis on the development of standards, codes of practice and guidelines. There will be substantial activity during the development of the National Directory for Radiation Protection.

While recognising that the Council performs an advisory function, and that the EPA is the decision maker, the parties agree to work through disagreement as follows:

- There will be an opportunity for discussion, including consideration of the decision-making processes of both the Council and the EPA.
- The EPA will advise the Council if it has formed a view that it intends to make a decision that is inconsistent with the Council’s advice and will provide an opportunity for discussion about the differences.
- The Council may request the EPA to provide an independent facilitator and the EPA will agree to consider each request in good faith.
7. Determinations for licensing and accreditation

The EPA is the determining authority for applications for licences and accreditations and for variations to licences and accreditations as made under Part 2 of the Radiation Control Act 1990. The EPA is empowered by section 9(8) of the Act to seek and take into consideration the advice of the Council on such matters.

Section 30 (2A and 2B) of the Act empowers the Council to provide advice to the EPA on Part 2 applications at any time and requires the Council to do so when asked by the EPA. The advice provided by the Council may be generic or specific, as the circumstances require.

The Council has provided the EPA with generic advice on Part 2 applications and this advice, known as ‘standing advice’, is recorded at Schedule 2 of the Council’s Corporate Governance and Operating Procedures manual. It is the duty of the EPA to keep the standing advice in Schedule 2 up to date. Part 2 applications that are fully covered by the standing advice at Schedule 2 are known as ‘routine applications’. Part 2 applications that are not covered by the standing advice, or are only partly covered, are known as ‘non-routine applications’.

Before any officer with the delegated authority to do so, determines a Part 2 application, they must have regard to the relevant requirements of Part 2 of the Act, the Radiation Control Regulation 2013 and the standing advice of the Council.

Unless the CEO of the EPA has agreed in writing to the following procedure being varied, the officer:

- may approve any routine application without first seeking the specific advice of the Council on the application, but
- before approving any non-routine application must seek and take into consideration the advice of the Council on the application, and
- before refusing any application must seek and take into consideration the advice of the Council on the application.

Normally the CEO of the EPA will approve a variation in this procedure only in an emergency, in which case the agreement of the Council with the determination is to be sought retrospectively as soon as practicable.

Barry Buffier  
CEO  
Environment Protection Authority

Craig Lamberton  
Chairperson  
Radiation Advisory Council

[The MoU was signed by both parties on 30 June 2016.]
## Appendix 5: Membership of Council committees in 2017-18

### National Directory Committee

<table>
<thead>
<tr>
<th>Member</th>
<th>Membership category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Richard Smart (chair)</td>
<td>Medical physicist</td>
</tr>
<tr>
<td>Dr Philip Pasfield</td>
<td>Radiologist</td>
</tr>
<tr>
<td>Dr Mary Dwyer</td>
<td>Radiation oncologist</td>
</tr>
<tr>
<td>Assoc. Prof. Lee Collins</td>
<td>Expert in non-ionising radiation</td>
</tr>
<tr>
<td>Mr Frank Galea</td>
<td>Expert in industrial uses of radiation</td>
</tr>
<tr>
<td>Mr Len Potapof</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
</tr>
<tr>
<td>Ms Daniela Freschi</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
</tr>
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### Course and Competency Committee

<table>
<thead>
<tr>
<th>Member</th>
<th>Membership category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Lee Collins (chair)</td>
<td>Expert in non-ionising radiation (medical physicist (radiology))</td>
</tr>
<tr>
<td>Mr Glen Burt</td>
<td>Diagnostic radiographer</td>
</tr>
<tr>
<td>Mr Paul Cardew</td>
<td>Expert outside RAC: medical physicist specialist (radiation oncology, radiology and nuclear medicine)</td>
</tr>
<tr>
<td>Mr Frank Galea</td>
<td>Expert in industrial uses of radiation</td>
</tr>
<tr>
<td>Mr Cameron Jeffries</td>
<td>Expert in naturally occurring radioactivity</td>
</tr>
<tr>
<td>Ms Daniela Freschi</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
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### Shielding Assessment and Verification Committee

<table>
<thead>
<tr>
<th>Member</th>
<th>Membership category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Richard Smart (Chair)</td>
<td>Medical physicist (nuclear medicine)</td>
</tr>
<tr>
<td>Mr Paul Cardew</td>
<td>Expert outside RAC: medical physicist specialist (radiation oncology, radiology and nuclear medicine)</td>
</tr>
<tr>
<td>Mr Lee Collins</td>
<td>Expert non-ionising radiation (medical physicist (radiology))</td>
</tr>
<tr>
<td>Mr Kevin Fitzsimmons</td>
<td>Expert outside RAC: Industry (shielding and construction)</td>
</tr>
<tr>
<td>Mr Frank Galea</td>
<td>Expert in industrial uses of radiation</td>
</tr>
<tr>
<td>Mr Nick Hille</td>
<td>Medical physics specialist (radiology and nuclear medicine)</td>
</tr>
<tr>
<td>Mr Dean Inwood</td>
<td>Medical physics specialist (radiation oncology)</td>
</tr>
<tr>
<td>Mr Adam Jones</td>
<td>Medical physics specialist (radiology)</td>
</tr>
<tr>
<td>Mr Brent Rogers</td>
<td>Health physicist</td>
</tr>
<tr>
<td>Ms Daniela Freschi</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
</tr>
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### Guideline 3 Review Committee

<table>
<thead>
<tr>
<th>Member</th>
<th>Membership category</th>
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<tbody>
<tr>
<td>Mr Frank Galea (chair)</td>
<td>Expert in industrial uses of radiation</td>
</tr>
<tr>
<td>Mr Brent Rogers</td>
<td>Expert in health physics</td>
</tr>
<tr>
<td>Mr Robert McLaughlin</td>
<td>Expert in mine radiation safety</td>
</tr>
<tr>
<td>Mr Sean Nunan</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
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### Guideline 6 Review Committee

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<tbody>
<tr>
<td>Dr Richard Smart (chair)</td>
<td>Medical physicist (nuclear medicine)</td>
</tr>
<tr>
<td>Mr Lee Collins</td>
<td>Expert in non-ionising radiation</td>
</tr>
<tr>
<td>Dr Philip Pasfield</td>
<td>Radiologist</td>
</tr>
<tr>
<td>Mr Glen Burt</td>
<td>Diagnostic radiographer</td>
</tr>
<tr>
<td>Mr Paul Cardew</td>
<td>Expert outside RAC: medical physicist specialist (radiology, radiotherapy and mammography)</td>
</tr>
<tr>
<td>Ms Tiffany Chiew</td>
<td>Expert outside RAC: radiographer</td>
</tr>
<tr>
<td>Ms Lucy Cartwright</td>
<td>Expert outside RAC: medical physicist specialist (radiology)</td>
</tr>
<tr>
<td>Dr Jennifer Diffey</td>
<td>Expert outside RAC: medical physics specialist (radiology)</td>
</tr>
<tr>
<td>Dr Ravinda Grewald</td>
<td>Expert outside RAC: medical physics specialist (radiology)</td>
</tr>
<tr>
<td>Mr Adam Jones</td>
<td>Expert outside RAC: medical physicist (radiology)</td>
</tr>
<tr>
<td>Mr Peter Williams</td>
<td>EPA (Hazardous Materials, Chemicals and Radiation Section)</td>
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</table>
# Acronyms and abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACPSEM</td>
<td>Australian College of Physical Scientists and Engineers in Medicine</td>
</tr>
<tr>
<td>ARPANSA</td>
<td>Australian Radiation Protection and Nuclear Safety Agency</td>
</tr>
<tr>
<td>CRE</td>
<td>consulting radiation expert</td>
</tr>
<tr>
<td>CT</td>
<td>computed tomography</td>
</tr>
<tr>
<td>EPA</td>
<td>NSW Environment Protection Authority</td>
</tr>
<tr>
<td>Gy</td>
<td>Gray</td>
</tr>
<tr>
<td>HCCC</td>
<td>NSW Health Care Complaints Commission</td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
</tr>
<tr>
<td>MoU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>mSv</td>
<td>milliSievert</td>
</tr>
<tr>
<td>NDRP</td>
<td>National Directory for Radiation Protection</td>
</tr>
<tr>
<td>PET</td>
<td>positron emission tomography</td>
</tr>
<tr>
<td>RAC</td>
<td>Radiation Advisory Council</td>
</tr>
<tr>
<td>RHC</td>
<td>Radiation Health Committee (national)</td>
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