IAEA-NS-IRRS-2023/07

ORIGINAL: English

INTEGRATED REGULATORY REVIEW SERVICE (IRRS)

FOLLOW-UP MISSION

TO

AUSTRALIA

Yallambie, Australia

16 to 24 October 2023

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY

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Integrated Regulatory Review Service

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REPORT OF THE

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THE INTEGRATED REGULATORY REVIEW SERVICE (IRRS) FOLLOW-UP MISSION TO

AUSTRALIA

Mission dates:	*16 to 24 October 2023*
Regulatory body visited:	*Australian Radiation Protection and Nuclear Safety Agency*
Location:	*ARPANSA Headquarters in Yallambie, Melbourne, Australia*
Regulated facilities, activities, and exposure situations in the mission scope:	*Research Reactor, Waste Management facilities, Decommissioning activities, Radiation sources facilities and activities, Transport of radioactive material, Control of medical exposure, Occupational radiation protection, Public and environmental exposure control, Emergency Preparedness and Response.*
Organized by:	*IAEA*

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IAEA-2023

The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety.

Comparisons of such numbers between IRRS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

At the request of the Commonwealth Government of Australia, an international team of senior safety experts met with representatives of ARPANSA, the Commonwealth Department of Health and Aged Care, the Australian Radioactive Waste Agency and State and Territory regulatory bodies from 16 to 24 October 2023 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The purpose of the IRRS follow-up mission was to review Australia's progress against the recommendations and suggestions identified in the initial IRRS mission, which was carried out from 5 to 16 November 2018. The scope of the IRRS follow-up mission was the same as the scope of the initial mission in 2018, namely the regulatory framework for all nuclear and radiation facilities and activities in Australia.

The IRRS team consisted of seven senior regulatory experts from six IAEA Member States, and three IAEA staff members.

The IRRS team carried out a review of the progress made on each recommendation and suggestion that was documented in the 2018 IRRS mission report. These recommendations and suggestions cover the following areas: responsibilities and functions of the government; the global safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body, including authorization, review and assessment, inspection, enforcement and the development and content of regulations and guides; emergency preparedness and response; control of medical exposure; occupational radiation protection; control of radioactive discharges, materials for clearance and control of existing exposure situations and remediation; environmental monitoring for public radiation protection.

To assess progress, the IRRS team conducted a series of interviews and discussions with ARPANSA, Commonwealth Government and the State and Territory regulatory bodies and reviewed the advance reference material provided by them.

The IRRS team notes significant changes have occurred in the Australian radiation and nuclear safety framework since 2018, for instance:

- In September 2021, Australia, the USA, and the UK announced the AUKUS trilateral security partnership, which includes the aim to provide conventionally armed nuclear-powered submarines to Australia. To manage this significant policy change, Australia established the Australian Submarine Agency (ASA) and articulated its intent to establish a new statutory regulator proposed to be known as the Australian Nuclear-Powered Submarine Safety Regulator (ANPSSR).
- In July 2020, Australia inaugurated the Australian Radioactive Waste Agency (ARWA) with the mission of handling the nation's radioactive waste. ARWA's responsibilities include overseeing the implementation and operation of Australia's proposed National Radioactive Waste Management Facility (NRWMF). Australia's plans to construct the NRWMF near Kimba faced legal challenges in 2021, leading to a decision in 2023 to discontinue preparation at the planned site and to not consider other potential sites identified in South Australia as part of the selection process for the Kimba site.
- The COVID-19 pandemic presented an unprecedented public health challenge and affected the resources of various regulatory bodies. Some personnel were reassigned to assist with pandemic-related activities, leading to resource constraints in the field of radiation safety.

These significant developments had a direct impact on the execution of the action plan established following the 2018 IRRS mission. Moreover, the establishment of new organizations, such as ASA and ARWA, has significantly increased the demand for radiation and nuclear safety expertise in Australia. The proposed

creation of a new Commonwealth regulator, ANPSSR, necessitates a clear delineation of roles and responsibilities among the existing regulators and in particular with ARPANSA.

One of the most prominent challenges identified by the 2018 IRRS mission was the establishment of a national framework for radiation safety that ensures a consistent level of safety and protection for individuals and the environment across all jurisdictions, both in principle and regulatory practice. In response, a series of activities have been undertaken at both national and jurisdictional levels. Notably, the adoption of the second edition of the National Directory for Radiation Protection (NDRP2) has laid the foundation for nationally agreed radiation safety codes and standards. However, the IRRS team noted that the implementation of NDRP2 has not proceeded uniformly and promptly across all jurisdictions.

Australia stands at a critical juncture in its journey towards enhancing radiation and nuclear safety. The dynamic landscape, exemplified by the AUKUS partnership, the establishment of new agencies like ASA and ARWA, and the challenges brought by the changing operating environment, underscore the need for a resilient and adaptable regulatory framework for radiation and nuclear safety. Achieving national uniformity in radiation safety is a primary objective, it necessitates a holistic approach that integrates national strategy, collaboration across jurisdictions, and robust mechanisms for timely policy implementation. The IRRS team underscored the importance of recognizing the substantial advantages of consistent regulation for public health, the regulated industry, and the efficient use of resources across the country as a whole.

To attain national uniformity in radiation safety, the IRRS team emphasized the following critical steps:

- Finalizing and implementing a national strategy on radiation safety.
- Encouraging and facilitating effective and efficient inter-jurisdictional collaboration in the development of regulatory activities.
- Considering binding mechanisms to guarantee consistent and timely implementation of the NDRP2.

The IRRS team offered additional specific findings to address the critical steps to attain national uniformity as mentioned above, noting that several 2018 recommendations that remain open are also related to the same topic. The review also demonstrates that significant challenges related to competencies and resources of all regulators identified in 2018 remain. The report also highlights substantial progress made since then. Out of the 23 recommendations and 12 suggestions from 2018, 16 recommendations and 10 suggestions have been successfully addressed and closed.

The IRRS team offered additional good practices:

- ARPANSA has published on its public-facing website the results of its assessment of leadership for safety and safety culture.
- The use of an incident management system across ARPANSA for routine recording of health and safety incidents will ensure that staff are familiar with the system and will use it effectively to manage the response to a nuclear or radiological emergency.

In conclusion, the IRRS team recognized the strong commitment of the Australian Government, ARPANSA, the Commonwealth Department of Health and Aged Care, ARWA and the State and Territory regulatory bodies to radiation safety.

The specific findings of the follow-up mission are summarized in Appendices V and VI.

A press release was issued by the IAEA at the end of the IRRS follow-up mission.

I. INTRODUCTION

At the request of the Commonwealth Government of Australia, an international team of senior safety experts met representatives of Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), the Commonwealth Department of Health and Aged Care, Queensland Health, Environmental Protection Authority from New South Wales, Department of Health and Human Services from Victoria, Environment Protection Authority from South Australia, Department of Health and Human Services from Tasmania, Radiological Council/Department of Health from Western Australia, Health Protection Service from Australian Capital Territory and the Australian Radioactive Waste Agency , from 16 to 24 October 2023 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The mission took place at ARPANSA Headquarters in Yallambie, Australia. The purpose of this peer review was to review Australia's progress against the recommendations and suggestions identified in the initial IRRS mission which was carried out from 5 to 16 November 2018.

The review mission was formally requested by the Commonwealth Government of Australia in April 2022. A preparatory meeting was conducted on 21 and 23 March 2023 at IAEA Headquarters in Vienna, Austria to discuss the purpose, objectives, and detailed preparations of the follow-up review in connection with regulated facilities, activities and exposure situations in Australia and their related safety aspects and to agree the scope of the IRRS follow-up mission.

The IRRS team consisted of 7 senior regulatory experts from 6 IAEA Member States, 2 IAEA staff members and 1 IAEA administrative assistant. The IRRS team carried out the review in the areas covered by the initial mission in November 2018.

In preparation for the IRRS follow-up mission, Australia conducted a self-evaluation of the status of recommendations and suggestions set out in the initial IRRS mission report and prepared a self-assessment follow-up report accordingly. This report and supporting documentation were provided to the IRRS team as advance reference material (ARM) for the mission. During the mission, the IRRS team performed a systematic review of all topics by reviewing the advance reference material and additional information provided, and by conducting interviews with management and staff of ARPANSA, the Commonwealth Department of Health and Aged Care, ARWA, and the State and Territory regulatory bodies.

Throughout the mission, the IRRS team received full cooperation in regulatory and technical areas by all parties. In particular, the staff of ARPANSA, Commonwealth Department of Health and Aged Care, ARWA and States and Territories provided excellent assistance and demonstrated extensive openness and transparency.

II. OBJECTIVE AND SCOPE

The purpose of this Integrated Regulatory Review Service (IRRS) follow-up mission was to conduct a review of the of the 23 recommendations and 12 suggestions that were given to Australia during the IRRS initial mission carried out from 5 to 16 November 2018 and to exchange information and experience in the areas covered by the IRRS.

The IRRS follow-up mission scope was the same as the scope of the initial mission covering the following areas: responsibilities and functions of the government; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body related to regulation of nuclear and radiation facilities and activities, including authorization, review and assessment, inspection, enforcement, the development and content of regulations and guides; emergency preparedness and response; occupational radiation protection; control of discharges; and environmental monitoring for public radiation protection.

The review was carried out by comparison of existing arrangements against the IAEA safety standards.

It is expected that the IRRS follow-up mission will facilitate regulatory improvements in Australia and other Member States from the knowledge gained and experiences shared between Australia's Counterparts and IRRS reviewers, and through the evaluation of the effectiveness of Australia 's regulatory infrastructure for nuclear and radiation safety.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IRRS TEAM

At the request of the Commonwealth Government of Australia, a preparatory meeting for the Integrated Regulatory Review Service (IRRS) follow-up mission was conducted on 21 and 23 March 2023. The preparatory meeting was carried out by the appointed Team Leader Mr. Petteri Tiippana, Deputy Team Leader Ms. Laura Dudes and the IRRS IAEA Team representatives, Mr. Hilaire Mansoux Team Coordinator and Mr. Gabriel Soare Deputy Team coordinator.

The IRRS follow-up mission preparatory team had discussions regarding regulatory programmes and policy issues with the senior management of ARPANSA represented by Ms. Gillian Hirth, Chief Executive Officer of ARPANSA, other senior management and staff. The discussions resulted in agreement that the review will cover the areas covered by the initial mission conducted in November 2018.

Ms Gillian Hirth made presentations on the national context, the current status of ARPANSA, States, Territories and the self-assessment results to date.

IAEA staff presented the IRRS principles, follow-up mission process and methodology. This was followed by a discussion on the tentative work plan for the implementation of the IRRS in Australia in October 2023.

The proposed composition of the IRRS Team was discussed and tentatively confirmed. Logistics of the mission, including meetings and workplaces, counterparts and Liaison Officer, proposed site visits, lodging and transportation arrangements were also addressed.

The ARPANSA Liaison Officer for the IRRS follow-up mission was confirmed as Mr. Christopher Nickel.

ARPANSA provided the IAEA with the advance reference material (ARM) for review at the end of August 2023. In preparation for the mission, the IAEA review team members reviewed the Australia ARM and provided their initial impressions to the IAEA Team Coordinator prior to the commencement of the IRRS follow-up mission.

B) REFERENCES FOR THE REVIEW

The relevant IAEA Safety Standards and the Code of Conduct on the Safety and Security of Radioactive Sources, together with IAEA Safety Standards as appropriate were used as review criteria. The complete list of IAEA publications used as the references for this mission is provided in Appendix VIII.

C) CONDUCT OF THE REVIEW

The initial IRRS Team meeting took place on Sunday 15 October 2023 in Melbourne, directed by the IRRS Team Leader and the IAEA Team Coordinator. Discussions encompassed the general overview, the scope and specific issues of the mission, clarification of the bases for the review and the background, context and objectives of the IRRS programme. The understanding of the methodology for review was reinforced. The agenda for the mission was presented to the team. As required by the IRRS Guidelines, the reviewers presented their initial impressions on the ARM and highlighted significant issues to be addressed during the mission.

The host Liaison Officer was present at the initial IRRS team meeting, in accordance with the IRRS Guidelines, and presented logistical arrangements planned for the mission.

The IRRS entrance meeting was held on Monday 16 October 2023, with the participation of ARPANSA senior management and staff. Opening remarks were made by Professor Paul Kelly, Chief Medical Officer of Australia, Mr. Petteri Tiippana Team Leader, IRRS Team Leader, Mr. Hilaire Mansoux, IRRS Team Coordinator and Ms Gillian Hirth, CEO of ARPANSA. Mr Christopher Nickel gave an overview of the Australian context, activities and the action plan prepared as a result of the pre-mission self-assessment.

During the IRRS mission, a review was conducted for all areas within the agreed scope with the objective of reviewing Australia's response to the recommendations and suggestions identified during the initial mission. An overview of nuclear and radiation safety regulation in Australia and the major changes since 2018 were presented. ARPANSA also made a presentation on the follow-up self-assessment and its main conclusions which the Australian contributors made as part of the ARM.

The review was conducted through meetings, interviews and discussions, regarding the national legal, governmental and regulatory framework for safety. The IRRS Team performed its review according to the mission programme given in Appendix II.

The IRRS exit meeting was held on Tuesday, 24 October 2023. The opening remarks at the exit meeting were presented by Ms Gillian Hirth, CEO of ARPANSA and were followed by the presentation of the results of the mission by the IRRS Team Leader Mr. Petteri Tiippana. Closing remarks were made by Ms Hildegarde Vandenhove, IAEA, Director, Division of Radiation, Transport and Waste Safety.

An IAEA press release was issued at the end of the mission.

RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

1.1. NATIONAL POLICY AND STRATEGY FOR SAFETY

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: While Australia has implemented the objectives of a national policy and strategy for safety within its framework for safety, the said strategy is yet to be formalized in a policy document. This has been recognized in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 1, para. 2.3 states that** *"National policy and strategy for safety shall express a long-term commitment to safety. The national policy shall be promulgated as a statement of the government's intent. The strategy shall set out the mechanisms for implementing the national policy."*
S1	**Suggestion: The Commonwealth Government, in conjunction with State and Territory Governments, should consider formalizing the existing elements of the framework for safety into a comprehensive national policy and strategy for safety.**

Changes since the initial IRRS mission

Suggestion 1: The Commonwealth government, in conjunction with State and Territory Governments, have committed to develop a National Strategy for Radiation Safety (the National Strategy) which will set the governments' intent and may facilitate better consistency when implementing actions identified under the National Strategy. A draft of the National Strategy underwent public consultation in 2021. A draft version of the National Strategy, with strategic actions, including inter-governmental agreement was in the final stages of agreement by Commonwealth, State and Territory governments. However, in light of the potential changes to the Australian radiation safety framework resulting from the AUKUS partnership announcement, a substantial revision of the draft national strategy was undertaken.

One of the key strategic actions listed in the latest draft National Strategy is to review Australia's radiation safety regulatory systems to ensure they are fit for purpose and able to manage current and emerging challenges. To support implementation of this action, the Commonwealth Government commissioned an independent consultant review of Australia's radiation safety regulatory framework in June 2023. The review is expected to be completed by the end of 2023. The expected outcomes from this review are the identification of challenges due to gaps in the regulatory legislation and approaches across jurisdictions and recommendations for future harmonisation efforts.

The IRRS team was informed that the latest draft National Strategy no longer contains inter-governmental agreements or other binding mechanisms to implement the governments intent for a comprehensive long-term commitment to safety. This new strategy appears to be no more legally binding than mechanisms that were in place prior to the 2018 mission. The IRRS team believes that the current strategy would benefit from mechanisms for implementation as required by the IAEA safety standard (see suggestion SF3). The IRRS team noted that the latest strategy has yet to be published.

Status of Suggestion 1

Suggestion 1 (S1) remains open as the National Strategy for Radiation Safety has not been established.

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

2018 MISSION RECOMMENDATIONS, SUGGESTIONS	
Observation: The Commonwealth, as well as all States and Territories, have jurisdiction in regard to the Framework for Safety. While all jurisdictions have committed to increase the level of national uniformity through instruments like the NDRP, the national codes and guides have not been implemented consistently by all Australian jurisdictions and harmonization and uniformity within the Australian legal and regulatory framework has not been achieved at the necessary level. This could potentially impact the safety of the public, workers and environment. Some mechanisms that were inhibiting progress have been addressed within the draft of the 2nd edition of the NDRP. However, the 2nd edition of the NDRP has not yet been approved by Australian Health Ministers. Additionally, measures regarding authorization, review and assessment, inspection, enforcement, and regulations are not being consistently applied. This has been partly recognized in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 2 para. 2.6 states that** *"Where several authorities are involved, the government shall specify clearly the responsibilities and functions of each authority within the governmental, legal and regulatory framework for safety."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 7 states that** *"Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for the effective coordination of their regulatory functions, to avoid any omissions or undue duplication and to avoid conflicting requirements being placed on authorized parties."*
(3)	**BASIS: GSR Part 1 (Rev 1) Requirement 7 para. 2.18 states that** *"Where several authorities have responsibilities for safety within the regulatory framework for safety, the responsibilities and functions of each authority shall be clearly specified in the relevant legislation. The Government shall ensure that there is appropriate coordination of and liaison between the various authorities …"*
R 1	**Recommendation: The Commonwealth Government, in conjunction with State and Territory Governments, should ensure a consistent level of protection of people and the environment through effective coordination and harmonized implementation of codes and guides by the Commonwealth, States, Territories and regulatory bodies.**

Changes since the initial IRRS mission

The draft National Strategy (see Suggestion 1) sets out the aims and principles for a radiation strategy and identifies 4 objectives, each objective having specific actions to be addressed before the end of 2026. This would enable a more coordinated approach to radiation regulation and contribute to national uniformity.

The Commonwealth, State and Territory regulators have collectively drafted, and agreed to the Second Edition of the National Directory for Radiation Protection (NDRP2) which establishes the national arrangements for regulatory functions. NDRP2 includes the list of Codes of Practice to be implemented by

all regulators. It was agreed by all Australian Health Ministers in 2021, indicating an agreement by all jurisdictions to implement, inter alia, the relevant Codes of Practice, exemptions and clearance levels.

Implementation of those Codes of Practice, exemptions and clearance levels, however, remains inconsistent across States and Territories, – as is evident through the specific responses to some Recommendations and Suggestions set out in this report. Although one of enHealth's goals is to ensure a nationally consistent approach to the implementation and compliance of radiation safety codes and standards, there is no systematic feedback from jurisdictions to enHealth on progress in actual implementation of codes adopted at the national level. In addition, whilst ARPANSA has a statutory mandate to promote national uniformity, it is not represented on enHealth, even with an observer status, when radiation safety matters are discussed. The IRRS team observed that the objectives for enHealth and RHERP to ensure a nationally consistent approach to the implementation and compliance of radiation safety codes and standards has not been fully achieved (See Suggestion SF3).

Status of Recommendation 1

Recommendation 1 (R1) remains open. The Commonwealth government in conjunction with the State and Territory governments, has made progress in developing a National Strategy for Radiation Safety, and has developed and adopted the NDRP2. However, the National Strategy has not been established and the consistent level of protection of people and the environment has not yet been achieved as the individual jurisdictions have had variable levels of actual implementation of the codes and principles set in NDRP2.

1.3. ESTABLISHMENT OF A REGULATORY BODY AND ITS INDEPENDENCE

There were no findings in this area in the original IRRS mission.

1.4. RESPONSIBILITY FOR SAFETY AND COMPLIANCE WITH REGULATIONS

There were no findings in this area in the original IRRS mission.

1.5. COORDINATION OF AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

There were no findings in this area in the original IRRS mission.

1.6 SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS

There were no findings in this area in the original IRRS mission.

1.7. PROVISIONS FOR THE DECOMMISSIONING OF FACILITIES AND THE MANAGEMENT OF RADIOACTIVE WASTE AND OF SPENT FUEL

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The Australian Radioactive Waste Management Framework presents the overall principles and long-term goals for radioactive waste management. The document, however, does not address the responsibilities and arrangements to ensure delivery of the commitments with associated timeframes and milestones.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 10 states that** *"The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities, and the safe management of spent fuel."*
(2)	**BASIS: GSR Part 5 Requirement 2 states that "***To ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles [2] and with international instruments, conventions and codes that have been ratified by the State. The national policy and strategy shall form the basis for decision making with respect to the management of radioactive waste.***"**
(3)	**BASIS: GSR Part 5 requirement 2, para 3.6. states that** *"The national strategy for radioactive waste management has to outline arrangements for ensuring the implementation of the national policy. It has to provide for the coordination of responsibilities. It has to be compatible with other related strategies such as strategies for nuclear safety and for radiation protection."*
(4)	**BASIS: GSR Part 1 (Rev 1) Requirement 2, para 2.5, states that** "*The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following:… Responsibilities and obligations in respect of financial provision for the management of radioactive waste and of spent fuel, and for decommissioning of facilities and termination of activities;…"*
R2	**Recommendation: The Commonwealth Government should establish and implement a strategy to give effect to the policy principles and goals in the Australian Radioactive Waste Management Framework.**

Changes since the initial IRRS mission

Recommendation 2: The Australian Radioactive Waste Agency (ARWA) was established in July 2020 as a stand-alone agency within the Department of Industry, Science and Resources (DISR), with the responsibilities of a national Radioactive Waste Management Organisation and to implement the policy principles and goals of the Australian Radioactive Waste Management Framework.

The government has provided funding to assure ARWA will carry out the following responsibilities and functions for the Australian government:

- manage the nation's radioactive waste in line with domestic and international regulations;
- deliver and operate Australia's National Radioactive Waste Management Facility (NRWMF);
- facilitate communication between government, industry, stakeholders, and local communities; and
- centralise best practice and knowledge about radioactive waste management, including developing a disposal pathway for intermediate level radioactive waste.

A NRWMF will be established to comprise a near surface disposal facility for suitable low-level waste and a facility for storing waste which cannot be so disposed while a suitable Intermediate Level Waste (ILW) disposal system is developed. After a 7-year consultation process, the Commonwealth Government acquired land for the site near Kimba in South Australia. The former Minister for Resources and Water declared this to be the chosen facility site. That decision was successfully challenged in court in 2023. As a result, the Minister for Resources announced the intention not to pursue the site near Kimba or other previously short-listed sites.

Australia's original plan to host an ARTEMIS at the end of 2024 has been postponed following the Minister's decision. Australia still has the intent to host an ARTEMIS although – the scope and timeframe for this has not yet been determined.

Status of Recommendation 2

Recommendation 2 is closed. The establishment of ARWA and the defined responsibilities meets the intent of the recommendation to implement a national strategy for radioactive waste management.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The Government has not established a national policy and strategy for decommissioning including timing and financial aspects.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 10, states that** *"The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities, and the safe management of spent fuel"*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 10, para. 2.28. states that** *"Decommissioning of facilities …shall constitute essential elements of governmental policy and the corresponding strategy …"*
(3)	**BASIS: GSR Part 6 Requirement 4, states that** *"The government shall establish and maintain a governmental, legal and regulatory framework within which all aspects of decommissioning, including management of the resulting radioactive waste, can be planned and carried out safely. This framework shall include a clear allocation of responsibilities, provision of independent regulatory functions, and requirements in respect of financial assurance for decommissioning."*
(4)	**BASIS: GSR Part 1 (Rev 1) Requirement 2, para 2.5, states that** *"The government shall promulgate laws and statutes to make provision for an effective governmental, legal*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	and regulatory framework for safety. This framework for safety shall set out the following:… *Responsibilities and obligations in respect of financial provision for the management of radioactive waste and of spent fuel, and for decommissioning of facilities and termination of activities;…"*
R3	**Recommendation: The Commonwealth Government should establish a national policy and strategy for decommissioning of facilities.**

Changes since the initial IRRS mission

Recommendation 3: ARWA has taken steps towards the development of a decommissioning strategy through a detailed Frazer Nash Consultancy report on Decommissioning Nuclear Facilities in Australia: Scoping Paper for National Decommissioning Strategy. ARWA's scope for the development of a NRWMF includes management of waste from the decommissioning of Australian nuclear facilities. The government has funded ARWA for further development of a national decommissioning strategy over the next 4 years. This will be undertaken in consultation with relevant organisations, including facility owners and regulators.

In addition, while ARWA continues to develop the Commonwealth Government's national strategy for decommissioning, progress has been made by ANSTO on the decommissioning of its nuclear facilities. The Commonwealth Government has provided funding to ANSTO to undertake decommissioning work, including decommissioning of the shutdown HIFAR reactor. ANSTO has sought approval for the decommissioning of HIFAR under the Environment Protection and Biodiversity Conservation Act (EPBC). This has been approved by the Department of Climate Change, Energy, Environment and Water (DCCEEW) and a decommissioning licence application for HIFAR (Phase 1 decommissioning) was submitted to ARPANSA in May 2023.

Status of Recommendation 3

Recommendation 3 (R3) remains open as ARWA has not completed the development of the decommissioning strategy.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: In Australia, with one exception (NSW), there is no legal requirement to establish financial provisions to cover the cost of managing a disused radioactive source. Although the current practice is that disused sources should generally be returned to the manufacturer, there are many disused sources that will have to be appropriately managed. It is expected that the disposal costs will have to be borne by the owners of the sources under the charging models that are in consideration.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 10 para. 2.33 states that** *"Appropriate financial provision shall be made for:* *(a) Decommissioning of facilities;* *(b) Management of radioactive waste, including its storage and disposal;* *(c) Management of disused radioactive sources and radiation generators;"*
(2)	**BASIS: GSR Part 3 Requirement 17 para. 3.60 states that** *"The Registrants and licensees shall ensure that arrangements are made promptly for the safe management of and control over radiation generators and radioactive sources, including appropriate financial provision, once it has been decided to take them out of use."*
(3)	**BASIS: Code of Conduct on the Safety and Security of Radioactive Sources para. 22 states that** *"Every State should ensure that its regulatory body: …* *(b) ensures that arrangements are made for the safe management and secure protection of radioactive sources, including financial provisions where appropriate, once they have become disused;"*
R4	**Recommendation: The Commonwealth Government, in conjunction with State and Territory Governments, should ensure that financial provisions are provided to enable the management of disused radioactive sources.**

Changes since the initial IRRS mission

Recommendation 4: The States and Territories have adopted NDRP2 which establishes the national arrangements for managing radioactive sources, including a national commitment to the Code of Conduct of the Safety and Security of Radioactive Sources and associated guidance. Paragraph 21 of NDRP2 lists the minimum requirements of legislation within the jurisdictions. This includes:

(21 e) "*prohibit any dealing with a radiation source without the appropriate authorization, unless the source is excluded, exempt or constitutes an authorized source, material or object that can be cleared from further regulatory control*".

(21 f) "*include requirements to ensure that authorized persons ensure that adequate provisions (including financial provisions) are made to cover the cost of managing a disused radioactive source*".

NDRP2 also addresses exemption and clearance where jurisdictions agree to apply criteria laid out in GSR Part 3 (and additional criteria recorded in NDRP2). Specific requirements may apply to the disposal of exempt/cleared sources in conventional disposal facilities as outlined in the Code for Disposal of Radioactive Waste by the User, RPS C-6 (2018).

Notably, South Australia amended its legislation in 2021 and included a requirement to secure financial assurances for discarded radiation sources. The IRRS team was informed that not all jurisdictions adopted the financial assurance provisions as agreed in NDRP2.

Although NDRP2 requires that authorized persons ensure that adequate provisions (including financial provisions) are made to cover the cost of managing a disused radioactive source, not all jurisdictions have

adopted the financial assurance provisions as agreed in NDRP2 as they have capacity to bear costs for orphaned sources where other mechanisms have failed (see Recommendation 1 regarding national uniformity). Whilst this practice may be appropriate for the current circumstances for some jurisdictions, it may not provide an enduring approach to radioactive source disposal as the Australian nuclear context evolves.

Status of Recommendation 4

Recommendation 4 (R4) remains open as not all jurisdictions have adopted the financial assurance provisions as agreed in NDRP2.

1.8. COMPETENCE FOR SAFETY

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: While efforts to build and maintain competence of all parties having responsibilities for safety have been made in some areas across the Australian jurisdictions, significant variation in implementing radiation protection programmes continues to exist. Additionally, the majority of regulatory bodies have indicated that their current staffing level and sometimes their technical competence for the breadth of radiation practices which are regulated across Australia was not commensurate with the range of regulatory tasks to be performed, taking into account the relatively high number of regulated entities.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 2 para. 2.6 states that** *"Where several authorities are involved, the government shall specify clearly the responsibilities and functions of each authority within the governmental, legal and regulatory framework for safety.*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 7 para. 2.35 states that** *"the building of competence shall be required for all parties with responsibilities for safety of facilities and activities, including authorized parties, the regulatory body and organizations shall be built, in the context of the regulatory framework for safety, by such means as:* *-technical training* *-learning through academic institutions and other learning centres* *-research and development work."*
(3)	**BASIS: GSR Part 1 (Rev 1) Requirement 18 states that** *"the regulatory body shall employ a sufficient number of qualified and competent staff, commensurate with the nature and the number of facilities and activities to be regulated, to perform its functions and to discharge its responsibilities."*
R5	**Recommendation: The Governments should ensure that all parties having responsibilities for safety of facilities and regulatory activities have the necessary competence and resources to carry out their responsibilities.**

Changes since the initial IRRS mission

Recommendation 5:

In response to the 2018 recommendation, and the IRRS Action Plan, State and Territory regulators have undertaken a self-audit against the IAEA's GSG-12 (Organization, Management and Staffing of the Regulatory Body for Safety) and GSG-13 (Functions and Processes of the Regulatory Body for Safety) to

identify gaps. Some key issues identified through these audits include staff competencies and training, which are a focus for all organizations. Several jurisdictions have identified a need for succession planning when staff retire. All jurisdictions commented on limited staffing resources, impeding adequate fostering of knowledge with new and replacement staff. To address this, staff in one State are rostered to different tasks on a weekly basis, ensuring all staff are exposed to all facets of radiation safety management to ensure that, when staff leave, there is some retention of knowledge.

As part of Australia's commitment to the initial implementation of its Nuclear-Powered Submarine Program, the Commonwealth Government committed $127.3 million over 4 years from 2023–26 for 4,000 additional Commonwealth supported places at universities and other higher education providers for courses that support the skills requirements of the nuclear-powered submarine program, including STEM (Science, Technology, Engineering and Mathematics) and management disciplines. This funding will help to assist the training for a sufficient number of qualified and competent staff, commensurate with the nature and the number of facilities and activities to be regulated. It can be expected that some of the graduates from these programs will work as regulators in nuclear and radiation safety.

The nuclear-powered submarine program may eventually become a great source of knowledge, education, and training to be deployed throughout the country. However, in the short term, regulatory bodies continue to need to employ competent, well-trained individuals to carry out their responsibilities. The self-audit the States and Territories completed revealed continued challenges with staffing and knowledge management.

Under the draft National Strategy, a key objective is to improve the consistency of safety outcomes and efficiency. An action identified under this objective is to develop and implement a national competency framework to ensure a consistent level of qualification to use radiation sources.

However, in the absence of a published, finalized National Strategy for Radiation Safety and the ensuing binding arrangements that will ensure a national competency framework, the IRRS team believes the jurisdictions will continue to be challenged in the areas of resourcing, training and knowledge management.

The IRRS team acknowledges the extensive work that has been done to ensure the uniform competency of the medical professionals that use radioactive sources and devices that contain or emit radiation. The regulatory bodies would benefit greatly from a similar approach to training and qualification for their staff.

Status of Recommendation 5

Recommendation 5 (R5) remains open as there is no final National Strategy and therefore no national competency framework for the regulatory bodies to facilitate employing highly trained staff for nuclear and radiation safety.

1.9. PROVISION OF TECHNICAL SERVICES

There were no findings in this area in the original IRRS mission.

2. THE GLOBAL SAFETY REGIME

2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR INTERNATIONAL COOPERATION

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: While Australia has committed to the implementation of the Code of Conduct on the Safety and Security of Radioactive Sources not all principles described therein have been established across Australia. For example, the existing National Sealed Source Register has been discontinued. However, there are additional items within the Code of Conduct that need to be addressed to achieve full implementation of the Code of Conduct. This has been partly recognized in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 14 states that** *"The government shall fulfil its respective international obligations, participate in the relevant international arrangements, including international peer reviews and promote international cooperation and assistance to enhance safety globally.*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 14, para. 3.2 (b) states that** *"The features of the global safety regime include: Codes of Conduct that promote the adoption of good practices in the relevant facilities and activities.*
(3)	**BASIS: CoC on the Safety and Security of Radioactive sources, II. Scope and Objectives, para. 5 (b) states that** *"These objectives should be achieved through the establishment of an adequate system of regulatory control of radioactive sources, applicable from the stage of initial production to their final disposal, and a system for the restoration of such control if it has been lost.*"
(4)	**BASIS: CoC on the Safety and Security of Radioactive sources, III. Basic Principles, para. 14 states that** *"Every State should establish a national register of radioactive sources. This register should, as a minimum, include Category 1 and 2 radioactive sources as described in Annex 1 to this Code. The information contained in that register should be appropriately protected. For the purpose of introducing efficiency in the exchange of radioactive source information between States, States should endeavour to harmonize the formats of their registers."*
R6	**Recommendation: The Commonwealth Government, in conjunction with State and Territory Governments should ensure full implementation of the Code of Conduct on the Safety and Security of Radioactive Sources.**

Changes since the initial IRRS mission

Recommendation 6: For Australia, full implementation of the Code of Conduct is achieved through adoption of the NDRP2, published in 2021, which establishes the national arrangements for managing radioactive sources. It specifically includes Australia's commitment to the Code of Conduct of the Safety and Security of Radioactive Sources and associated guidance.

In practice, depending on the jurisdictions, there are varying levels of implementation of the Code of Conduct of the Safety and Security of Radioactive Sources, including managing radiation sources from initial production to appropriate final disposal (see Recommendation 1 regarding national uniformity).
Another issue to be addressed is the National Sealed Source Register (NSSR) which is no longer being supported by ARPANSA because of the resource burden associated with reconciling 9 different systems

that do not have a uniform approach to licensing and oversight resulting in a data set that remains essentially static from the time of data entry. Each jurisdiction maintains a sealed source register and the RHC and ARPANSA continue to receive data from jurisdictional source registers when requested.

Status of Recommendation 6

Recommendation 6 (R6) remains open as not all States and Territories have fully adopted the Code of Conduct.

2.2. SHARING OF OPERATING EXPERIENCE AND REGULATORY EXPERIENCE

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Operating and regulatory experience is being shared between the regulatory bodies of Australia, through the RHC, conferences, workshops and professional bodies. However, the existing methods need improvement to better disseminate national and international experience gained by the regulatory bodies across the Australian jurisdictions. This has been recognized in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) requirement 15 states that** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from operating experience and regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities.*
(2)	**BASIS: GSR Part 1 (Rev 1) requirement 15, para 3.4 states that** *"The regulatory body shall establish and maintain a means for receiving information from other States, regulatory bodies of other States, international organizations and authorized parties, as well as a means for making available to others lessons learned from operating experience and regulatory experience.*
S2	**Suggestion: ARPANSA, in conjunction with the State and Territory regulatory bodies, should consider improving on the methods to better disseminate national and international experience gained by the regulatory bodies across the Australian jurisdictions.**

Changes since the initial IRRS mission

Suggestion 2: ARPANSA manages and acts as the national point of contact on a number of national and international registers, which are used to share operating and regulatory experience domestically and internationally. ARPANSA represents Australia and participates in the work of the committees established by the OECD/Nuclear Energy Agency, in the work of the World Health Organization (WHO) and the International Commission on Radiological Protection (ICRP), and in scientific fora such as the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). Australia and ARPANSA participate actively in the work of the IAEA.

The RHC is recognized for its role as a forum for exchange of national and international regulatory experience and information on incidents and accidents between regulatory peers. Since March 2020, the RHC has included reporting events or experience with safety/regulatory significance as a standing agenda item at its meetings. At each quarterly meeting, two jurisdictions present recent experience providing

information on major events of regulatory significance. The RHC considers whether any learnings may require changes to existing regulatory approaches or national guidance. Any changes recommended by RHC are then considered and in some cases, the RHC may initiate new work to issue guidance, revise codes, or refer issues to enHealth/RHERP where appropriate.
Although RHC and RHERP are fora where discussions on regulatory experience and implementation challenges can take place, the IRRS team considers that these fora could be more systematically used to have in-depth exchange of information with a goal of progressing national uniformity (see Recommendation 7 and Suggestion SF1).

Status of Suggestion 2

Suggestion 2 (S2) is closed as multiple avenues to disseminate and review operating experience have been established, including standing discussions at the RHC and the annual and periodic reports published by ARPANSA.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: An annual report summarising events reported in ARIR is published by ARPANSA. No structured assessment is conducted by any regulatory bodies regarding the need to update their respective regulatory requirements or guidance or review and assessment or inspection and licensing processes as a result of the lessons learned from these events.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 15 states that** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from operating experience and regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 15 para 3.5 states that** *"To enhance the safety of facilities and activities globally, feedback shall be provided on measures that have been taken in response to information received via national and international knowledge and reporting networks. Such measures could comprise promulgating new regulatory requirements or making safety enhancing modifications to operating practices or to equipment in authorized facilities and activities…"*
R7	**Recommendation: Regulatory bodies should assess the need for updating regulatory requirements or guidance, review and assessment, inspection and licensing processes after considering the events reported in ARIR, especially the noteworthy events highlighted in the annual ARIR report.**

Changes since the initial IRRS mission

Recommendation 7: The ARIR raises awareness about where, how, and why incidents occur and how they can be best prevented. ARPANSA manages the ARIR and publishes yearly reports based on input from State and Territory regulators and professional bodies.

ARPANSA advised that the ARIR 2021 Annual Report which had been due for publication in 2022 has not yet been published. This was due to a number of factors that included issues with quality of data provided during the notification process.

The Radiation Health Expert Reference Panel (RHERP) discussions on incident reporting have centered on ARIR annual reports up to 2020, the notification process and incident follow-up, as well as future monitoring and reporting of incidents and forwarding of the reports to relevant bodies. The RHERP contemplated future steps on monitoring and reporting incidents and agreed options to improve incident reporting and intelligence could be scoped. Jurisdictions provided the report and key points of RHERP discussions to relevant bodies. Whilst this practice by RHERP facilitates a dialogue that could lead to program improvements as a result of incident reports, the approach could be strengthened through a more structured approach to reviewing information and making formal recommendations to enHealth for program improvements across the jurisdictions.

In January 2023, a radioactive source (20 GBq of Cs-137, with a dose rate of 1.5 mSv/h at 1m) was lost during the transport of a radioactive gauge previously damaged within Western Australia (WA) then recovered . The management of this event, which lead to significant media attention inside and outside Australia, involved many Commonwealth and Western Australian resources. Short term regulatory action in WA included contacting licensees with the same gauge type, and the manufacturer (which is located in QLD), having them report on their condition and requiring them to put the gauge out of service.

A post-incident investigation and review has been initiated by the WA regulatory body. Preliminary findings include, for example, causal factors including gauge design (e.g. adequacy of bolts used) and transport conditions.

Following the January 2023 missing source event, the Western Australia regulatory body initiated several actions to prevent a similar event involving the same gauge type and to identify the lessons to be learned from the event. Up to now limited actions have been taken in other jurisdictions to address lessons learned from this event as they become available.

In July 2023 the RHC agreed to establish a working group to consider the final findings of the WA investigation (when released) and review and how these findings impact guidance documents for fixed and mobile gauges that are currently under review.

Status of Recommendation 7

Recommendation 7 (R7) remains open as while RHERP did review and discuss ARIR incidents across the jurisdictions, there is no structured approach to recommend improvements to regulatory requirements or guidance in relation to incident reporting or follow up.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

3.1. ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

There were no findings in this area in the original IRRS mission.

3.2. EFFECTIVE INDEPENDENCE IN THE PERFORMANCE OF REGULATORY FUNCTIONS

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has mechanisms to provide for independent review of regulated activities undertaken by ARPANSA through inclusion of state regulators to participate in regulatory oversight activities. An MOU was in place with the Queensland authority, which documented their independent oversight of inspections of ARPANSA activities (though was lacking provisions for review and assessment). However, the MOU has expired.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 7, para. 4.7 states that** *"The regulatory body shall prevent or duly resolve any conflicts of interests or, where this is not possible, shall seek a resolution of conflicts within the governmental and legal framework."*
S3	**Suggestion: ARPANSA should consider formalizing its arrangements to independently review its oversight of regulated facilities and activities undertaken by ARPANSA, including their authorization, review and assessment, and inspection.**

Changes since the initial IRRS mission

Suggestion 3: Since the IRRS Mission in 2018, ARPANSA has established arrangements requiring the independent review of the oversight of ARPANSA regulated facilities and activities undertaken by ARPANSA's Regulatory Services Branch (RSB). In such circumstances, the ARPANSA management system requires an officer of a state or territory regulatory body to be involved so as to seek to mitigate the risks of any potential conflict of interest arising. ARPANSA has signed several Memoranda of Understanding (MoU) with some States and Territories to facilitate this, which cover exchange of information, assistance, and cooperation.
Although the suite of MoUs does not extend to all State and Territory regulators, ARPANSA is seeking to extend coverage where practicable. In circumstances where an MoU has not been implemented, ARPANSA provided examples to the IRRS team of where ARPANSA and a state or territory have collaborated to mitigate risks arising from potential conflict of interest.

Status of Suggestion 3

Suggestion 3 (S3) is closed as ARPANSA has formalized the arrangements for independent review of its oversight of ARPANSA's regulated facilities and activities.

3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has many elements of a human resources plan, including a robust succession programme. ARPANSA has not assessed the number and capabilities of staff required to effectively perform their regulatory and emergency response duties, including a training programme that is based on an analysis of the necessary skills and competencies. This has been recognized in the ARM, and is part of the action plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 18, para. 4.11 states that** *"A human resources plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities for them to perform all the necessary regulatory functions"*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 18, para. 4.13 states that** *"This process shall include the development of a specific training programme on the basis of an analysis of the necessary competence and skills. The training programme shall cover principles, concepts and technological aspects, as well as the procedures followed by the regulatory body for assessing applications for authorization, for inspecting facilities and activities, and for enforcing regulatory requirements."*
R8	**Recommendation: ARPANSA should enhance its human resource management to include an assessment of the number and capabilities of staff required to effectively perform their regulatory and emergency response duties and enhance their training programme based on an analysis of the necessary skills and competencies.**

Changes since the initial IRRS mission

Recommendation 8: Since the IRRS mission in 2018, ARPANSA has enhanced its Human Resource management through the development of the ARPANSA Workforce Strategy 2022-2025. An assessment of workforce risks, mitigation strategies and the number of staff necessary to perform ARPANSA's regulatory functions has been conducted.

Staff capability requirements for different levels of seniority have been assessed using the IAEA Systematic Assessment of Regulatory Competence Needs (SARCoN) methodology. The IRRS team was informed that a competence matrix is being developed to map the specific knowledge, skills and abilities identified for all regulatory staff members, which will identify any competency gaps which can then be systematically addressed by ARPANSA.

Status of Recommendation 8

Recommendation 8 (R8) is closed on the basis of progress made and confidence in effective completion in due time as ARPANSA has developed, and started to implement, an HR strategy for the organization.

3.4. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

There were no findings in this area in the original IRRS mission.

3.5. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORIZED PARTIES

There were no findings in this area in the original IRRS mission.

3.6. STABILITY AND CONSISTENCY OF REGULATORY CONTROL

There were no findings in this area in the original IRRS mission.

3.7. SAFETY RELATED RECORDS

There were no findings in this area in the original IRRS mission.

3.8. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has a robust and transparent approach to communicating with interested parties. However, ARPANSA does not have requirements for authorized parties to undertake similar communication activities, other than during emergency situations. Some evidence of licensee's communications with interested parties does exist.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 36, para. 4.66 states that** *"The regulatory body shall establish, either directly or through authorized parties, provision for effective mechanisms of communication."*
(2)	**BASIS: GSG-6, para. 3.2 states that** *"The regulatory body should place requirements on authorized parties to inform and, when appropriate, consult interested parties about the radiation risks associated with the operation of a facility or the conduct of activities, including the results of the safety assessment. The regulatory body should also place requirements on authorized parties to make available to relevant interested parties decisions with regard to measures for protection and safety. These requirements should be specified in regulations promulgated by the regulatory body, in the authorization or by other legal means."*
(3)	**BASIS: GSR Part 2 Requirement 5 states that** *"Senior management shall ensure that appropriate interaction with interested parties takes place."*
S4	**Suggestion: ARPANSA should consider developing and implementing requirements for authorized parties to establish effective mechanisms of communication with interested parties.**

Changes since the initial IRRS mission

Suggestion 4: Since the IRRS Mission in 2018, ARPANSA has acknowledged that the development and implementation of requirements for authorized parties to establish effective mechanisms of communication with interested parties is considered best practice.

Although there is currently no ARPANSA guidance for applicants or licence holders for community engagement, the IRRS team was informed that during the next review and update of the ARPANSA Regulatory guide - plans and arrangements for managing safety (planned during 2024), additional

expectations consistent with international best practice will be considered for inclusion in that guidance and for which draft text has been prepared.

It is noted that the core regulatory function "communication and consultation with interested parties", as defined in GSG-6 and GSG-13, is also applicable to State and Territory radiation safety regulatory bodies.

Status of Suggestion 4

Suggestion 4 (S4) is closed on the basis of progress made and confidence in effective completion in due time, as ARPANSA has drafted provisions to be included in the ARPANSA Regulatory guide - plans and arrangements for managing safety in 2024.

4. MANAGEMENT SYSTEM OF THE REGULATORY BODY

4.1. RESPONSIBILITY AND LEADERSHIP FOR SAFETY

There were no findings in this area in the original IRRS mission.

4.2. RESPONSIBILITY FOR INTEGRATION OF SAFETY INTO THE MANAGEMENT SYSTEM

There were no findings in this area in the original IRRS mission.

4.3. THE MANAGEMENT SYSTEM

There were no findings in this area in the original IRRS mission.

4.4. MANAGEMENT OF RESOURCES

There were no findings in this area in the original IRRS mission.

4.5. MANAGEMENT OF PROCESSES AND ACTIVITIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has completed the first phase in the development and implementation of an integrated management system (IMS) that incorporates and connects existing systems for quality management and integrates all regulatory functions, but the work is not finalized. Regulatory processes will be integrated during the second phase of the IMS project. ARPANSA has not developed methods for the identification, development and modification of its processes within the IMS. ARPANSA´s core and supporting processes are not comprehensively identified, defined and implemented across the agency, and the interactions between processes are not fully elaborated. This has been partly recognized in the ARM and is part of the action plan.	
(1)	**GSR Part 2, Requirement 10 states that** *"Processes and activities shall be developed and shall be effectively managed to achieve the organization´s goals without compromising safety."* *4.32 Each process or activity that could have implications for safety shall be carried out under controlled conditions, by means of following readily understood, approved and current procedures, instructions and drawings. These procedures, instructions and drawing shall be validated before their first use and shall be periodically reviewed to ensure their adequacy and effectiveness. Individuals carrying out such activities shall be involved in the validation and the periodic review of such procedures, instructions and drawings."*
(2)	**GSR Part 2, Req. 10 para 4.28 states that** *"Each process shall be developed and shall be managed to ensure that requirements are met without compromising safety. Processes shall be documented…"*
(3)	**GSR Part 2, Req. 10 para 4.29 states that** *"The sequencing of a process and the interactions between processes shall be specified so that safety is not compromised. Effective interaction*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	between interfacing processes shall be ensured. Particular consideration shall be given to interactions between processes within the organization, and to interactions between interactions between processes conducted by the organization, and to interactions between processes conducted by external service providers."
(4)	**GSR Part 2, Req. 10 para 4.32 states that** *"Each process or activity that could have implications for safety shall be carried out under controlled conditions, by means of following readily understood, approved and current procedures, instructions and drawings. These procedures, instructions and drawing shall be validated before their first use and shall be periodically reviewed to ensure their adequacy and effectiveness. Individuals carrying out such activities shall be involved in the validation and the periodic review of such procedures, instructions and drawings."*
R9	**Recommendation: ARPANSA should further define, develop, and document its processes including sequencing of the processes and the interactions between interfacing processes within the IMS.**

Changes since the initial IRRS mission

Recommendation 9: Since the IRRS Mission in 2018, ARPANSA has strengthened and improved its IMS by better defining, developing, and documenting its regulatory processes. The IMS was improved to also include the sequencing of its processes and the interfaces between them.

Continuous improvement is being achieved through a number of initiatives described in the IMS, including internal and external auditing, analysis of opportunities for improvement raised by employees, analysis of reported incidents and near misses, and updates to applicable codes and standards. Furthermore, ARPANSA has commenced a series of projects and digital transformation activities which were shown to the IRRS team and which will further improve the ARPANSA IMS.

Status of Recommendation 9

Recommendation 9 (R9) is closed on the basis of progress made and confidence in effective completion in due time as ARPANSA has better defined, developed and documented its processes, has started to embed continuous improvement, and is undertaking project and digital transformation activities which will further strengthen its IMS.

4.6. CULTURE FOR SAFETY

There were no findings in this area in the original IRRS mission.

4.7. MEASUREMENT, ASSESSMENT AND IMPROVEMENT

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES
Observation: ARPANSA has made a commitment to conduct an assessment of leadership and safety

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
culture of ARPANSA´s regulatory functions, however, this assessment does not cover all levels and functions of the organization. This has been recognized in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 2, Requirement 14 states that** *"The senior management shall regularly commission assessments of leadership for safety culture in its own organization."*
(2)	**BASIS: GSR Part 2, Req. 14 para 6.9 states that** *"Senior management shall ensure that self-assessment of leadership for safety and of safety culture includes assessment at all organizational levels and for all functions in the organization. Senior management shall ensure that such self-assessment makes use of recognized experts in the assessment of leadership and of safety culture."*
(3)	**BASIS: GSR Part 2, Req. 14 para 6.10 states that** *"Senior management shall ensure that an independent assessment of leadership for safety and of safety culture is conducted for enhancement of the organizational culture for safety (i.e. the organizational culture as it relates to safety and as it fosters a strong safety culture in the organization)."*
(4)	**BASIS: GSR Part 2, Req. 14 para 6.11 states that** *"The results of self-assessments and independent assessments of leadership for safety and of safety culture shall be communicated at all levels in the organization. The results of such assessments shall be acted upon to foster and sustain a strong safety culture, to improve leadership for safety and to foster a learning attitude within the organization."*
R10	**Recommendation: ARPANSA should undertake an independent assessment of leadership for safety and safety culture covering all organizational levels and all functions in the organization.**

Changes since the initial IRRS mission

Recommendation 10:

Since the IRRS Mission in 2018, ARPANSA has strengthened its capability in safety culture and has conducted an assessment of leadership for safety and safety culture which included staff from all parts of organization and from all organisational levels. The assessment was conducted by a core team of internal specialists in safety culture, with an organizational psychologist and an independent consultant bound by a code of ethics used to secure independence from senior management. The results of this assessment, including the reports, have been communicated to all staff and published on ARPANSA's website.

Work continues to foster and enhance ARPANSA's leadership for safety and safety culture, including the commissioning of a second safety culture assessment which is currently underway and is due to report in 2024.

Although the requirement to undertake regular safety culture assessments is yet to be included in the ARPANSA management system, the IRRS team were informed that this is planned to be implemented soon.

Status of Recommendation 10

Recommendation 10 (R10) is closed as ARPANSA has undertaken an assessment of, and continues to foster and enhance, its leadership for safety and safety culture. A second assessment is underway.

New good practice from the follow-up mission

FOLLOW UP Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has undertaken an assessment of its leadership for safety and safety culture which it has communicated across all levels within the organization. Furthermore, ARPANSA has published the results of this assessment on its website.	
(1)	**BASIS: GSR Part 2 paragraph 4.6 states that** *"Senior management shall identify interested parties for their organization and shall define an appropriate strategy for interaction with them."*
(2)	**BASIS: GSR Part 2 paragraph 6.11 states that** *"The results of self-assessments of leadership for safety and safety culture shall be communicated at all levels in the organization. The results of such assessments shall be acted upon to foster and sustain a strong safety culture, to improve leadership for safety and to foster a learning attitude within the organization."*
GPF1	**Good Practice: ARPANSA has published on its public-facing website the results of its assessment of leadership for safety and safety culture.**

5. AUTHORIZATION

5.1. GENERIC ISSUES

There were no findings in this area in the original IRRS mission.

5.2. AUTHORIZATION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Several State and Territory regulatory bodies indicated that amendments of licences in order to update the list of sources or apparatus or renew user licence, result in a significant workload, more often as a result of administrative rather than technical issues. In some jurisdictions, the maximum duration of authorization is set by the law.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 2 para. 2.5 states that** *"The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following: …* *(3) The type of authorization* that is required for the operation of facilities and for the conduct of activities, in accordance with a graded approach; …* *(8) Provision for the review and assessment of facilities and activities, in accordance with a graded approach …"* ** Authorization' includes approval, written permission, licensing, certification or registration*
(2)	**BASIS: GSR Part 3 defines registration as** *"A form of authorization for practices of low or moderate risks whereby the person or organization responsible for the practice has, as appropriate, prepared and submitted a safety assessment of the facilities and equipment to the regulatory body. The practice or use is authorized with conditions or limitations as appropriate.* *The requirements for safety assessment and the conditions or limitations applied to the practice would be less severe for registration than those for licensing."*
(3)	**BASIS: GSG-13 para. 3.76 states that** *"The concepts of notification, authorization by registration, and authorization by licensing broadly represent a graded approach to regulatory control based upon the levels of risk or the nature of the facility or activity"*
S5	**Suggestion:** The State and Territory regulatory bodies should consider reviewing their requirements for authorization (authorization by licence vs authorization by registration and duration of an authorization), based on their regulatory experience and risks, with the goal of making better use of existing regulatory resources.

Changes since the initial IRRS mission

Suggestion 5:

Authorization scheme

All jurisdictions have agreed, under the arrangements of the NDRP2 to *(21(j))* "*provide for a system of authorisations, registrations and notifications"; and that (23) "Legislation will establish different types of authorisations to regulate dealings with radiation sources".*

During the interviews, the IRRS team collected the following information:

Table : Data on the authorization scheme and authorized parties

	NSW	VIC	TAS	SA	QLD	ACT	NT	WA	Commonwealth
Management licence	Yes (3002)	Yes (2,865)	Yes	Yes (948)	No (possession licence)	No	N/A	Issued as a 'registration' (2,995)	No
Typical validity of a management licence	1 year	1 year (10%), 2 years (47%), 3 years (43%)	1-2 years	1 year (5 year proposed)	N/A	N/A	N/A	1-3 years	N/A
Possession licence	No	No	Yes	Part of Management Licence	Yes	Yes	Yes	Issued as a 'registration'	Yes
Typical validity of a possession licence	N/A	N/A	1-2 years	N/A	1-3 years	1- 3 years	Maximum 3 years.	1-3 years	No expiry, typically amended within 3 years
Equipment/place registration	N/A	Yes (10,482)	Yes	Yes (3,750)	Yes	Yes	Yes. lifetime registration	Issued as a 'registration'	Facilities are listed on the licence.
User licensing	Yes (20,226)	Yes (17,441)	N/A	Yes (7,412)	Yes	1-3 years	Maximum 3 years,	Yes (10,639) 1-3 years	No

QLD: A possession licence may have a number of authorisations and conditions listed in the licence. An applicant may apply for a 1, 2 or 3 year licence decided by the applicant. Possession licences include the radiation practice that is to be managed. they are, in effect, management licences.

A person who holds a possession licence must apply for and obtain an approval to acquire every radiation source they hold in QLD. The details of the radiation source, and the premises where it is located, are maintained on a departmental register and is available to the licensee. A fee is paid per radiation source at the time of the possession licence renewal. Details are checked via routine source and premises certification

A use licence may have a number of authorisations and conditions listed in the licence. Use licences are not usually linked in any way to particular possession licensees.

WA: Management licence is issued as a 'registration', required under §28 of the Radiation Safety Act. This is for all aspects of possession and management, also covering the premises and any radioactive substances, irradiating apparatus or electronic product. User licence validity can be chosen by the applicant for 1 or 3 years.

ACT : Sources are linked to the possession licence but are registered separately. Places where sources are located included in the source registration and therefore are not registered separately.

NT Representative was not able to participate to the interviews and ARPANSA provided information in this table to the best of its abilities. Technicians, engineers, physicists, or any suitably qualified person who tests, installs, maintains radiation sources can be issued a certificate of accreditation authorising use of a radiation source. Use licences are typically linked to an approved possess licence. Sources and places that are registered are typically linked to an approved possess licence, however the person who holds the registration may not possess, use, and/or store the radiation source. Registered sources and places typically require certificates of compliances issued at most Tri annually to maintain currency with registration compliance requirements

NSW:	Possesion is regulated under a management licence. Management licences also contain a register of all equipment owned by the licensee
TAS:	Tasmania issues radiation licence which includes all, equipment, premises and users under a single licence . Amendment of the licence is required to add new equipment or personel. Tasmania do not issue individual user licene.

Most jurisdictions have updated the mechanisms to apply for a licence, expanding their on-line services and updating their IT systems to minimize the administrative burden to regulatory staff. A few jurisdictions have not introduced any changes in their authorization scheme but some jurisdictions have modified their regulations to better reflect the graded approach in their authorization scheme to reduce unnecessary licensing requirements. For example, one jurisdiction decided to develop authorization by registration, another is issuing licences based upon the applicant passing predetermined approved training courses.

Some regulators have also modified the way they review and assess applications.

Mutual recognition

In addition, to facilitate work across Australia, NDRP2 includes the provisions to support mutual recognition of authorizations among jurisdictions. This has been achieved by implementing *"common competency requirements for radiation protection and safety to ensure consistency in the criteria for user licensing across Australian jurisdictions*."

The Commonwealth *Mutual Recognition Act 1992* was amended in 2021 to allow for Automatic Deemed Registration (ADR) for licensed individuals to work across States and Territories. The goal is to make it easier for workers who need to be licensed or registered for their job to work in other States and Territories. All States and Territories, other than Queensland, have adopted and implemented this framework. While Queensland is not implementing this part of the updated framework, it continues to implement the remaining provisions of the *Mutual Recognition Act 1992*.

The RHERP has analysed the current licensing framework for radiation protection, in light of the changes of the Mutual Recognition Act 1992. RHERP has initially focussed on the dental and veterinary professions, which represent a large number of licence holders. RHERP intends to extend this analysis to other industries and professions using radiation in the future.

Status of Suggestion 5

Suggestion 5 (S5) is closed as jurisdictions have reviewed their authorization mechanisms based on their regulatory experience and risks, and some have modified them with the goal of making better use of existing regulatory resources.

New suggestion from the follow-up mission

Although jurisdictions have made changes to their authorization schemes and mechanisms to submit and process applications and to issue authorizations, existing interjurisdictional forums were not used to discuss the evolved arrangements and the rationale that supported the decisions to make them. Considering the challenges faced by most regulators in relation to human resources, whilst recognizing that each regulator operates in a specific context, the IRRS team considers that using interjurisdictional forums to facilitate

these discussions would significantly contribute to collective continuous improvement and enhance national uniformity across the jurisdictions.

The benefit of these discussions could be extended to all core regulatory functions.

In addition, considering the mutual recognition provisions applicable in Australia, decisions taken by one regulatory body may have an impact beyond its jurisdiction, which brings another justification for discussing, sharing and possibly agreeing changes collectively before their implementation.

FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Since 2018, some State and Territory regulatory bodies have modified their legislation or regulations to better reflect the graded approach and risk informed approach in the authorization scheme. Sharing the basis for such modifications has not been sufficient to promote greater efficiency and consistency across Australia and better inform each regulatory body in its choices regarding the authorization scheme in its jurisdiction.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 7 para. 2.18 states that** *"Where several authorities have responsibilities for safety within the regulatory framework for safety, the responsibilities and functions of each authority shall be clearly specified in the relevant legislation. The government shall ensure that there is appropriate coordination of and liaison between the various authorities concerned […]* *Such coordination assists in achieving consistency and in enabling authorities to benefit from each other's experience.*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 15 states that** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from […] regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by […] the regulatory body and other relevant authorities*
(3)	**BASIS: GSG-12 para. 3.20 states that** *"Information and knowledge are part of the corporate memory of the regulatory body and should be managed as a key resource that is embedded in the regulatory body's processes, activities and functions […]. Effective management for safety will take into account the knowledge and information resulting from both positive and negative experiences (e.g. good practices and bad practices). Examples of information and knowledge relevant for regulatory bodies include the following:* *[…][2]* *- Lessons learned from regulatory practices, for example, techniques of assessment and inspection;* *- Feedback from interested parties;* *- Feedback of experience from other authorities and national and international bodies;* *[…] "*
SF1	**Suggestion: All regulatory bodies should consider further developing and using a formalized process for identifying lessons to be learned from regulatory experience from other jurisdictions and for sharing lessons learned from their regulatory experience, with the goal of making better use of existing regulatory resources and improving consistency across Australia.**

5.3. AUTHORIZATION OF RESEARCH REACTORS

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: In ARPANS Regulations there is no authorization Stage for extended shutdown. An analysis comparing the ARPANSA requirements and guidance against current safety standards is currently underway and was described in the ARM.	
(1)	**BASIS: GSR Part 1 (Rev 1), para. 4.29 states that** "For a facility, the stages in the lifetime usually include: site evaluation, design, construction, commissioning, operation, shutdown and decommissioning (or closure)."
(2)	**BASIS: Code of Conduct on the Safety of Research Reactors, Code 20** states that "The regulations and guidance established by the State or the regulatory body according to national arrangements should (t) Where necessary in national circumstances, establish criteria for the safety of research reactors in extended shutdown".
(3)	**BASIS: SSR 3 requirement 87 states that:** *If an extended shutdown is planned or occurs, the operating organization for a research reactor facility shall establish and implement arrangements to ensure the safe management, planning, effective performance and control of work activities during the extended shutdown.*
S6	**Suggestion: ARPANSA should consider revising the regulation and guidance for licensing of research reactors to include extended shutdown and associated submission requirements.**

Changes since the initial IRRS mission

Suggestion 6: ARPANSA currently regulates two research reactors, HIFAR, which is in extended shutdown prior to decommissioning, and one operating research reactor, OPAL:

- OPAL is regulated under an "Operating licence";
- HIFAR is regulated under a "Possess or Control licence".

During periods of extended shutdown, ARPANSA may regulate the reactors using a "Possess or Control" facility licence. This approach is not expected to be used for typical planned shutdowns but may be used, if needed, for extended shutdown periods of substantial time; for instance, an unexpected shutdown with a duration of more than a year. To clarify the regulatory expectations and safety requirements for extended shutdown periods that can occur while a facility holds an "Operating licence", ARPANSA decided not to update regulations but has revised the Possess or Control Guide to include a new section addressing extended shutdown periods that may occur under an operating licence. The guide, now known as Regulatory Guide - Possess or Control and Extended Shutdown of a Facility or Source, is applicable to all facilities, including research reactors, and all sources.

The updated guide recognises that a facility may need to be shut down for an extended period (typically months) without first amending the type of licence. According to the guide, the licence holder should assess the risks associated with an extended shutdown (including the transition to and from the shutdown) and provide plans and arrangements for safety during an extended shutdown, until a decision on the future (permanent shutdown prior to decommissioning, restart of operation) of the facility is made.

Status of Suggestion 6

Suggestion 6 (S6) is closed as updated guidance for licensing research reactors during extended shutdown has been published by ARPANSA.

5.4. AUTHORIZATION OF RADIOACTIVE WASTE MANAGEMENT FACILITIES

There were no findings in this area in the original IRRS mission.

5.5. AUTHORIZATION OF DECOMMISSIONING ACTIVITIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA regulations only specify submission of a decommissioning plan for a decommissioning licence application. ARPANSA has developed a decommissioning guide which requires a decommissioning plan for all licensing stages of a facility. The need to implement this as a requirement has been recognized in the ARM and is part of the Action Plan.	
(1)	**BASIS: GSR PART 6 Requirement 5: Responsibilities of the regulatory body for decommissioning states that** *"The regulatory body shall regulate all aspects of decommissioning throughout all stages of the facility's lifetime, from initial planning for decommissioning during the siting and design of the facility, to the completion of decommissioning actions and the termination of authorization for decommissioning. The regulatory body shall establish the safety requirements for decommissioning, including requirements for management of the resulting radioactive waste, and shall adopt associated regulations and guides. The regulatory body shall also take actions to ensure that the regulatory requirements are met."*
(2)	**Basis GSR PART 6 paragraph 7.5 states that** "*The decommissioning plan shall be updated by the licensee and shall be reviewed by the regulatory body periodically (typically every five years or as prescribed by the regulatory body), or when specific circumstances warrant, such as if changes in an operational process necessitate significant changes to the plan. The decommissioning plan shall be updated as necessary in the light of relevant operational experience gained, available lessons learned from the decommissioning of similar facilities, new or revised safety requirements, or technological developments relevant to the selected decommissioning strategy. If an accident occurs or a situation arises with consequences relevant for decommissioning, the decommissioning plan shall be updated by the licensee as soon as possible and shall be reviewed by the regulatory body."*
S7	**Suggestion: ARPANSA should consider revising the conditions of licence to require decommissioning plans for all life stages of the facility.**

Changes since the initial IRRS mission

Suggestion 7: ARPANSA decided that amending licences was not the most efficient way to address the need for decommissioning plans. Therefore, the ARPANS Regulations have been updated to include a requirement for a decommissioning plan to be provided at all stages in the lifecycle of a facility. The decommissioning plan is required to be periodically reviewed.

In addition, ARPANSA's Regulatory Guide "Decommissioning of Controlled Facilities" was updated in 2020. It outlines the expectations for managing safety during decommissioning and identifies instances whereby the licensee should update the decommissioning plan.

Status of Suggestion 7

Suggestion 7 (S7) is closed as the ARPANS Regulations and ARPANSA regulatory guide on decommissioning were updated.

5.6. AUTHORIZATION OF TRANSPORT

There were no findings in this area in the original IRRS mission.

6. REVIEW AND ASSESSMENT

6.1. GENERIC ISSUES

There were no findings in this area in the original IRRS mission.

6.1.1. MANAGEMENT OF REVIEW AND ASSESSMENT

There were no findings in this area in the original IRRS mission.

6.1.2. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the original IRRS mission.

6.1.3 BASES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the original IRRS mission.

6.1.4. PERFORMANCE OF REVIEW AND ASSESSMENT

There were no findings in this area in the original IRRS mission.

6.2. REVIEW AND ASSESSMENT FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has acknowledged the need to review its regulatory oversight in the light of last year's events at ANSTO Health facility. Some actions have already been initiated but ARPANSA has not completed a comprehensive evaluation to determine whether its current regulatory measures (regulations and guides, review and assessment, inspection and licensing) require modification, based on the lessons learned, including but not limited to those identified in the recently published ANSTO independent safety review report, with respect to the events that occurred at the ANSTO Health facility.	
(1)	**BASIS: GSR Part 1 (Rev 1) requirement 15 states that** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from operating experience and regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities."*
(2)	**BASIS: GSR Part 1 (Rev 1) para. 4.43 states that** *"The regulatory body shall assess all radiation risks associated with normal operation, anticipated operational occurrences and accident conditions, prior to operation of the facility or conduct of the activity, and periodically throughout the lifetime of the facility or the duration of the activity, to determine whether radiation risks are as low as reasonably achievable."*
(3)	**BASIS: GSR Part 1 (Rev 1) para. 4.46 states that** *"For an integrated safety assessment, the regulatory body shall first organize the results obtained in a systematic manner. It shall then*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	identify trends and conclusions drawn from inspections, from reviews and assessments for operating facilities, and from the conduct of activities where relevant. Feedback information shall be provided to the authorized party. This integrated safety assessment shall be repeated periodically, with account taken of the radiation risks associated with the facility or activity, in accordance with a graded approach."
(4)	**BASIS: GSR Part 1 (Rev 1) para. 4.53 states that** "*In conducting inspections, the regulatory body shall consider a number of aspects, including:* *—Structures, systems, components and materials important to safety;* *—Management systems;* *—Operational activities and procedures;* *—Records of operational activities and results of monitoring;* *—Liaison with contractors and other service providers;* *—Competence of staff;* *—Safety culture;* *—Liaison with the relevant organization for joint inspections, where necessary*."
R11	**Recommendation: ARPANSA should conduct a comprehensive evaluation to determine whether its current regulatory oversight measures (regulations and guides, review and assessment, inspection and licensing) should be modified, based on lessons learned, including but not limited to those identified in the ANSTO independent safety review report, of the events that occurred at the ANSTO Health facility.**

Changes since the initial IRRS mission

Recommendation 11: Following the ANSTO event and the associated independent review report, ARPANSA has conducted a comprehensive evaluation to determine where its regulatory oversight measures (regulations and guides, review and assessment, inspection and licensing) needed to be modified based upon learned lessons. As a result:

- Some changes have been incorporated in the ARPANS Regulations to better recognize human and organisational factors (HOF);
- ARPANSA has published regulatory guides (including Radiation Incident Site Preservation, and Preparation of the safety analysis report for non-reactor facilities) to provide additional recommendations to licensees;
- ARPANSA's Inspection Manual, Review and Assessment Manual and Compliance Manual have all been updated. A significant change across these documents is the requirement to identify lessons learned from inspections and assessments, as well as becoming more risk focused and better accounting for human and organisational factors. Performance objectives and criteria to be used when inspecting have also been updated;
- ARPANSA has prepared internal guidance for staff who may receive a notification that an event has occurred. It outlines the process for regulatory triage and provides a procedure for response to a reportable event, with the objective of applying a consistent approach to decision-making and response to a nuclear or radiological event.

Status of Recommendation 11

Recommendation 11 (R11) is closed as the ARPANS Regulations and ARPANSA internal procedures have been updated to incorporate lessons learnt from the event.

New Suggestion from the follow-up mission

One of the recommendations in the independent review report was for ARPANSA to re-introduce thematic inspections. Such thematic inspections are not currently performed but ARPANSA confirmed its intent to reinstate them. ARPANSA is building new data systems and implementing improved inspection practices in human and organisational factors to properly target these inspections where needed. In addition, the new RAD system, soon to be available, will support these inspections, enabling a better oversight of shared services across facilities of one licensee. However, ARPANSA also recognizes challenges related to the current inspection processes and practices to facilitate thematic inspection.

FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Several licensees regulated by ARPANSA rely on shared services to perform some safety related activities. Currently, ARPANSA inspections are facility (licence) related and this is not an efficient way to control some safety related activities.	
(1)	**BASIS: GSR Part 1 (Rev 1) para. 4.53 states that** *"In conducting inspections, the regulatory body shall consider a number of aspects, including:* - *Structures, systems and components and materials important to safety;* - *Management systems;* - *Operational activities and procedures;* - *Records of operational activities and results of monitoring;* - *Liaison with contractors and other service providers;* - *Competence of staff;* - *Safety culture;* - *Liaison with the relevant organization for joint inspections, where necessary"*
(2)	**BASIS: GSG-13 para. 3.229 states that** *"In addition to verifying compliance with regulatory requirements, the regulatory body's inspection programme should be able to obtain a general indication of safety performance at the facility or activity."*
(3)	**BASIS: GSG-13 para. 3.237 states that** *"Regulatory inspection should include a range of planned and reactive inspections over the lifetime of the facility or activity and should include inspections of relevant parts of the authorized party's organization and its contractors' organizations to ensure compliance with regulatory requirements."*
(4)	**BASIS: GSG-13 para. 3.242 states that** *"The regulatory body should consider conducting special inspections addressing specific issues that are of interest to the regulatory body"*
(5)	**BASIS: GSG-13 para. 3.260 states that** *"Inspection should not be limited to the facility or activity itself and should cover any safety related services that may be provided at an authorized party's headquarters or other offices, such as activities relating to the development of safety assessments, outage planning or training."*
SF2	**Suggestion: ARPANSA should consider amending its inspection processes and practices to facilitate thematic inspections.**

6.3. REVIEW AND ASSESSMENT FOR RESEARCH REACTORS

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has not required the licensee to conduct full range of accident analysis including severe accident analysis and design extension condition as part of the safety analysis report.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 26 Paragraph 4.43 states that** *"The regulatory body shall assess the radiation risks associated with normal operation, anticipated operational occurrences and accidents, including possible events with a very low probability of occurrence, prior to operation of the facility or conduct of the activity, and periodically throughout the lifetime of the facility or the duration of the activity, to determine whether radiation risks are as low as reasonably achievable."*
(2)	**SSR-3 Requirement 22 states that:** *"A set of design extension conditions for a research reactor shall be derived for the purpose of enhancing the safety of the research reactor by enhancing its capabilities to withstand, without unacceptable radiological consequences, accidents that are either more severe than design basis accidents or that involve additional failures…."*.
S8	**Suggestion: ARPANSA should consider requiring the licensee to perform severe accident analysis, assess design extension conditions and update final safety analysis accordingly.**

Changes since the initial IRRS mission

Suggestion 8: ARPANSA reviewed the safety cases for licensed facilities to determine which facilities should undertake further accident analysis in accordance with this suggestion. ARPANSA concluded that the OPAL research reactor was the only existing facility which required an analysis of design extension conditions (DECs). Responding to a new licence condition added by ARPANSA, ANSTO developed the OPAL DECs using the requirements of IAEA SSR-3. The set of DECs were derived on the basis of engineering judgement and by using deterministic assessments and complementary probabilistic assessments, as appropriate. The methodology used in this assessment was consistent with the guidance contained in IAEA Safety Reports Series No. 80 (Safety Reassessment for Research Reactors in the Light of the Accident at the Fukushima Daiichi Nuclear Power Plan). The analysis concluded that existing safety features are capable of preventing or mitigating events considered in the DECs. Consequently, no modifications were required. ARPANSA reviewed and approved the DECs and the revised safety analysis report in May 2022.

Beyond the specific case of the OPAL research reactor, the ARPANS Regulations were amended in 2018 to include a requirement for a safety analysis report to be prepared at all stages of the life of new facilities and for it to be reviewed every 3 years. Accordingly, ARPANSA updated its Regulatory Guide – "Preparation of the safety analysis report for non-reactor facilities" (2021) which states that licence holders should consider DECs as part of the accident analysis (where appropriate).

Status of Suggestion 8

Suggestion 8 (S8) is closed as the ARPANS Regulations and ARPANSA regulatory guidance were updated and a specific review was completed for the OPAL research reactor.

6.4. REVIEW AND ASSESSMENT FOR WASTE MANAGEMENT FACILITIES

There were no findings in this area in the original IRRS mission.

6.5. REVIEW AND ASSESSMENT FOR DECOMMISSIONING ACTIVITIES

There were no findings in this area in the original IRRS mission.

6.6. REVIEW AND ASSESSMENT FOR TRANSPORT

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: There are no measures to ensure a consistent review of applications for approval of package design and special form radioactive material design by different regulatory authorities. This may have consequences beyond Australia as such approval may also enable use of the package in foreign countries. This has been recognized in the ARM and is part of the Action Plan.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 22 states that** *"The regulatory body shall ensure that regulatory control is stable and consistent."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 7 states that:** *"Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for the effective coordination of their regulatory functions, to avoid any omissions or undue duplication and to avoid conflicting requirements being placed on authorized parties."*
(3)	**BASIS: GSR Part 1 (Rev 1) Requirement 20 states that:** *"The regulatory body shall obtain technical or other expert professional advice or services as necessary in support of its regulatory functions, but this shall not relieve the regulatory body of its assigned responsibilities."*
(4)	**BASIS: GSR Part 1 (Rev 1) Requirement 15 states that** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons to be learned from operating experience and regulatory experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities."*
R12	**Recommendation: Regulatory bodies as well as the Civil Aviation Safety Authority and the Australian Maritime Safety Authority, should coordinate to ensure consistent review of applications for approval of package design and special form radioactive material design.**

Changes since the initial IRRS mission

Recommendation 12: In Australia, 11 competent authorities have been designated as regulatory body for the safe transport of radioactive material. A national working group (Transport Competent Authority Forum), led by ARPANSA, has been established to discuss all relevant regulatory matters and national uniformity.

Regulations

The Australian Code for the Safe Transport of Radioactive Material (RPS C-2) gives effect to the requirements of the IAEA SSR-6 Rev. 1 (2018) in Australia. This Code, which is referenced within NDRP2, establishes uniform requirements for transporting radioactive material in Australia by road, rail and waterways not covered by maritime legislation. Maritime and air transport are regulated by AMSA and CASA under IMDG code and ICAO Technical Instructions, respectively, both of which incorporate the provisions of IAEA SSR-6 (2018).

The Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code) Edition 7.8 (December 2022), administered by the National Transport Commission, will be mandatory from 1 April 2024 in all jurisdictions, except for Class 7 dangerous goods. The ADG Code refers in principle to the revised RPS C-2 (Rev.1) but the web link included in the ADG Code is faulty.

RPS C-2 has been enacted by jurisdictions, as follows:

	ARPANSA	ACT	QLD	NSW	NT	SA	TAS	VIC	WA
Regulation	✓		✓	✓		✓	✓		✓
Licence conditions	✓	✓	✓		✓		✓	✓#	§

The condition will be implemented via variations to licences, pending the update to VIC's database for managing these licences

§ Equipment registration requirements (Authorisation for equipment and premises to possess and use)

Authorization

ARPANSA maintains the database of Australian certificate numbers and assigns the number for each certificate issued by any competent authority in Australia (ARPANSA is the single point for providing the AUS Certificate Number). ARPANSA approves designs for packages that may be used outside of Australia. ARPANSA can also issue certificates for packages designed by Commonwealth entities.

For packages being used domestically, package designs requiring approval can be approved by jurisdictional regulators, even if this is does not often happen in practice. State or Territory competent authorities usually request advice from ARPANSA on the technical assessment of compliance with SSR-6 provisions but, in such cases, the responsibility for issuance of the certificate remains with the State or Territory competent authority.

Status of Recommendation 12

Recommendation 12 (R12) is closed on the basis of progress made and confidence in effective completion in due time as RPS C-2 Rev.1 has been published and its implementation is underway in some jurisdictions (discussed further under Recommendation 15).

7. INSPECTION

7.1. GENERIC ISSUES

There were no findings in this area in the original IRRS mission.

7.1.1. INSPECTION PROGRAMME

There were no findings in this area in the original IRRS mission.

7.1.2. INSPECTION PROCESS AND PRACTICE

There were no findings in this area in the original IRRS mission.

7.1.3 INSPECTORS

There were no findings in this area in the original IRRS mission.

7.2. INSPECTION OF RADIATION SOURCES, FACILITIES AND ACTIVITIES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Several Regulatory Bodies of States or Territories recognized that currently they do not perform a sufficient number of inspections, due to a lack of staff and the geographical size of their respective jurisdictions. Resources are primarily allocated to perform licensing related tasks. A yearly inspection programme has not been developed in some jurisdictions where inspections are only performed when a significant event occurs or a complaint is filed (reactive inspection).	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 27 states that** *"The regulatory body shall carry out inspections of facilities and activities to verify that the authorized party is in compliance with the regulatory requirements and with the conditions specified in the authorization."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 28 states that** *"Inspections of facilities and activities shall include programmed inspections and reactive inspections; both announced and unannounced."*
(3)	**BASIS: GSR Part 1 (Rev 1) para 4.50 states that** *"The regulatory body shall develop and implement a programme of inspection of facilities and activities, to confirm compliance with regulatory requirements and with any conditions specified in the authorization. In this programme, it shall specify the types of regulatory inspection (including scheduled inspections and unannounced inspections), and shall stipulate the frequency of inspections and the areas and programmes to be inspected, in accordance with a graded approach."*
(4)	**BASIS: GSR Part 1 (Rev 1) Requirement 3 states that** *"The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities."*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
R13	**Recommendation: The State and Territory regulatory bodies should develop an inspection strategy and carry out a resource allocation assessment.**

Changes since the initial IRRS mission

Recommendation 13: Jurisdictions have agreed, under the arrangements of NDRP2 to "*develop and implement an adequately resourced inspection strategy and inspection program, in line with a nationally agreed compliance and enforcement strategy*."

As part of the response to Recommendation 5, several regulatory bodies also decided to undertake a self-audit against IAEA GSG-12 and GSG-13, including consideration of inspection strategies and resourcing.

All jurisdictions confirmed that they had an inspection strategy, some of them being currently under review to account for changes in regulations or to improve implementation of the graded approach.

Regarding the ability to implement their strategies, several jurisdictions mentioned challenges related to the availability of resources – typically those devoted mostly to the licensing tasks – and the cost associated with performing on-site inspections. In order to improve the status of implementation, in some jurisdictions, the regulators rely on support from colleagues from across their organisations or on the support of the licence holders through the completion of questionnaires.

During the interviews, the IRRS team collected the following information:

Table : data on inspectors and inspections

	Licensees	Regulatory body resources	Inspections performed		
			2021	2022	First half f 2023
ARPANSA	93	28 inspectors	20	40	24
ACT	1,625 licensees (Combined user/possession licence is possible so this number cannot be split). 849 source registrations	2 full time Physicists Shared admin support Non-radiation specialist management	13 shielding inspections 12 inspections of orphan/ legacy source Store. 88 compliance tests of sources by third party contracted tester. Up to 4 supervised low level rad. waste disposals.	21 shielding inspections 12 inspections of orphan/ legacy source Store. 97 compliance tests of sources by third party contracted tester. Up to 4 supervised low level rad. waste disposals	15 shielding inspections 6 inspections of orphan/ legacy source Store. 43 compliance tests of sources by third party contracted tester. Up to 2 supervised low level rad. waste disposals. 1 inspection of a storage unit
NSW	3,028 Management licences 20,635 User licences	5 radiation protection officers 30 trained authorised officers	33	96	36
NT					

QLD	Possession licence holders: 2,742 Use licence holders: 19,827 Transport licence holders: 232 Radiation safety officer certificate holders: 1,570 Accreditation certificate holders : 171 (There were 3,322 applications to acquire or relocate radiation sources completed in the last 12 months.)	8 inspectors appointed under the Act within the Radiation Health Unit: Approx. 113 inspectors appointed under the Act within the Public Health Units across the State:	151 (planned) 29 (unplanned)	258 (planned) 49 (unplanned)	203 (planned) 12 (unplanned)
SA	948 Management licence holders holding a total of 3,750 registrations	15 Radiation Protection Officers 2 Radiation adminstration officers 30 authorised officers	50	50	15
TAS	472 licence which includes users and equipment	3 authorised officers under the Radiation Protection Act: (health physicists)	75 Physical inspections	44 Physical inspections	21 Physical Inspection 80 Desktop inspection (Dental)
VIC	2,865 Management licences 17,441 User Licenses 10,482 equipment in possession	15 Radiation safety officers who are Authorised Officers under the Radiation Act 2005 3 other Authorised Officers under the Radiation Act 2005 A small team that provides operational/administrative and system support is shared with other regulatory teams	205	487	208
WA	As of 30 September 2023, 2,995 registrations and 10,639 licences. It is common for registrations to have multiple locations listed, this ranges from a few additional locations to hundreds of locations. Number (18 October 2023) of items registered in WA : 7,157 sealed radioactive sources 7,301 items of irradiating apparatus	Resources are limited to those employed within the Radiation Health unit. Currently 7.6 full time equivalent technical officers, 6 of which are authorised officers appointed under the Radiation Safety Act and can conduct inspections unsupervised.	38	27	14

	In 2022: 881 amendments to registrations/licences processed	4.2 full time equivalent clerical officers.			
Covid pandemic was still significant in 2021 ACT : Shielding inspections include review of shielding plan suitability beforehand and multiple rooms within a single inspection. Inspection consisting of supervised low level radioactive waste disposals depends on disposer attendance. NT representative was not able to participate in the interviews. SA: NOTE Figures provided are estimated. Consultation and engagement on new Regulations changed the nature of engagements and significantly reduced formal compliance inspection numbers through FY21-22 and FY22-23					

Several jurisdictions have also implemented, or are in the process of implementing, training to improve competency of staff performing inspections, and an inspector certification process which will need to be completed before the conduct of inspections.

Status of Recommendation 13

Recommendation 13 (R13) remains open as inspection strategies are still under review, and availability of resources to implement these strategies remain a concern for many jurisdictions.

7.3. INSPECTION OF RESEARCH REACTORS

There were no findings in this area in the original IRRS mission.

7.4. INSPECTION OF WASTE MANAGEMENT FACILITIES

There were no findings in this area in the original IRRS mission.

7.5. INSPECTION OF DECOMMISSIONING ACTIVITIES

There were no findings in this area in the original IRRS mission.

7.6. INSPECTION OF TRANSPORT

There were no findings in this area in the original IRRS mission.

8. ENFORCEMENT

8.1. ENFORCEMENT POLICY AND PROCESS

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Some regulatory bodies indicated that they did not have a formal enforcement policy describing the approach used to determine which enforcement measures should be used for various types of situations.	
(1)	**BASIS: GSR Part 1 (Rev 1) requirement 30 states that** *"The regulatory body shall establish and implement an enforcement policy within the legal framework for responding to non-compliance by authorized parties with regulatory requirements or with any conditions specified in the authorization."*
R14	**Recommendation: State and Territory regulatory bodies should have an enforcement policy to provide staff direction in the application of enforcement actions commensurate to the significance and nature of any regulatory non-compliance.**

Changes since the initial IRRS mission

Recommendation 14: Jurisdictions have agreed, under the arrangements of the NDRP2 to establish "*national enforcement policy to direct staff in the application of enforcement actions, which are proportionate to the significance and nature of regulatory non-compliance*."

In March 2023, enHealth endorsed the Radiation Safety Compliance and Enforcement Principles around six themes (safety culture, regulatory effectiveness, risk-based, proportionate approach, evidence-based regulation, lawful and appropriate regulatory response, and engagement, transparency and trust).

During the interviews, the IRRS team collected the following information:

Table : Document formalizing the enforcement policy

	Document formalizing the regulator's enforcement policy	Date of the document	Consistency with enHealth Radiation Safety Compliance and Enforcement Principles
ARPANSA	ARPANSA Compliance manual ARPANSA-GDE-1117 v6	May 2022	Consistent
ACT	Radiation regulators are Authorised Officers under the *Radiation Protection Act 2006* and the *Public Health Act 1997*. An ACT Health enforcement flowchart covers enforcement under the *Public Health Act 1997*.		The document(s) will be reviewed and compared for consistency with the enHealth Radiation Safety Compliance and Enforcement Principles document once this has been finalised/published. If suitable, the enHealth document will be adopted or used as the basis to develop a new ACT Health document specific for Radiation Safety.
NSW	NSW EPA Regulatory Strategy and Policy	2021-2024	Our Regulatory Policy centres around risk-based, outcomes focused regulation. This is consistent with enHealth's aim of

			establishing a 'risk-based framework to manage non-compliance'. NSW has adopted the NDRP2 that includes in principle agreement to the development of a national compliance & enforcement policy.
NT	-	-	-
QLD	Radiation Safety Act 1999 – Strategy to Achieve Compliance	May 2023 (under review)	Part of the review will be to ensure that the enHealth principles are captured in addition to the review in the light of the new Overall Risk Categorisation of Practice Types for Planned Compliance Activities
SA	SA EPA Regulatory Approach (2022) SA EPA Compliance and enforcement regulatory options and tools (2009) SA EPA Managing Contraventions IOP43 (2022) (Review and update to address new radiation legislation for completion FY2023-24)	See opposite column	The Radiation specific update will enable alignment with enHealth documents
TAS	Internal policy document on compliance and enforcement	July 2022	Consistent
VIC	Compliance and Enforcement Policy – Radiation Act 2005. (Published on website https://www.health.vic.gov.au/publications/compliance-and-enforcement-policy)(A more detailed internal document to inform Authorised Officers is unpublished and was last revised in May 2023) Full regulatory approach available at https://www.health.vic.gov.au/radiation/how-we-regulate-radiation-in-victoria	Published February 2021	Consistent
WA	Radiological Council Enforcement Strategy (in draft). Due for consideration/approval by the Statutory Authority on 13 February 2024.		Will be consistent
NT representative was unable to participate in interviews.			

Jurisdictions are seeking to implement more comprehensive policies over time, noting that the principles are a reference point or basis for the further implementation of these policies, that would be nationally consistent.

The IRRS Team noted that the compliance and enforcement principles to assist with forming a National Compliance Strategy, are still in draft form.

Status of Recommendation 14

Recommendation 14 (R14) is closed on the basis of progress made and confidence in effective completion in due time as principles are established (albeit in draft form) and agreed at the national level.

In addition, most jurisdictions have established policies, and the other jurisdictions will have formalized their policies in the coming months.

8.2. ENFORCEMENT IMPLEMENTATIONS

There were no findings in this area in the original IRRS mission.

9. REGULATIONS AND GUIDES

9.1. GENERIC ISSUES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The process for obtaining Australian Health Minsters' approval to adopt a new national code risks delaying implementation of national codes that may be important to nuclear and radiation safety. The draft second edition of the NDRP addresses this. Further, implementation of new codes and standards is inconsistent amongst regulatory bodies. This can lead to significant delays in implementing new requirements.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 32 states that** *"The regulatory body shall establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration taken of relevant international safety standards and technical standards and of relevant experience gained."*
(3)	**BASIS: GSG-13 para. 3.61 states that** *"The process of developing regulations and guides should be described in procedures and should be sufficiently flexible to permit timely revisions to be made to take account of changes in technological, legal and practical conditions."*
S9	**Suggestion: The Commonwealth Government, in conjunction with State and Territory Governments should consider revising the process to maintain and update the NDRP and the means for implementing codes in order to support timely adoption and implementation of new national codes.**

Changes since the initial IRRS mission

Suggestion 9: Jurisdictions have agreed, under the arrangements of NDRP2, on the way to revise this National Directory, including the Codes it refers to. These new governance arrangements provide clarity on the roles and responsibilities for the establishment and dissemination of codes and standards:

- The RHC formulates draft radiation protection codes and standards for consideration by the Commonwealth, the States and Territories. The RHC also periodically reviews adopted codes and standards to ensure they continue to reflect world best practice.
- The CEO of ARPANSA presents radiation protection codes or standards formulated by the RHC to enHealth for consideration and adoption by the Commonwealth, the States and Territories.

Furthermore, the Chair of enHealth and ARPANSA formalised an agreement to facilitate efforts towards nationally consistent radiation safety regulatory frameworks and radiation health outcomes.

enHealth is responsible for ensuring a nationally consistent approach to the implementation of radiation safety codes and standards and ultimately, in theory, oversee implementation of NDRP2, to improve consistency of the national framework for radiation protection.

The IRRS team was informed that in a few cases documents prepared to set out expectations would remain as guidance and not as codes due to the lack of support from some jurisdictions.

Status of Suggestion 9

Suggestion 9 (S9) is closed as the process to develop nd adopt codes is defined in NDRP2.

New suggestion from the follow-up mission

Although the process to adopt a code at the national level, by including it in the NDRP2, is now well defined, the process to ensure its actual implementation in each jurisdiction relies solely on each jurisdiction: there is no obligation to implement within an agreed timeframe and no systematic feedback process in place to ensure that such implementation occurs. This is considered a shortcoming to the implementation of codes across all jurisdictions (see Recommendation 1 regarding national uniformity). This in turn may hinder the delivery of the core regulatory function for the development and/or provision of regulations and guides.

FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: There is no obligation to implement NDRP2 within an agreed timeframe and no systematic feedback process in place to ensure that such implementation occurs.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 32 states that** *"The regulatory body shall establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based."*
(2)	**BASIS: GSR Part 1 (Rev 1) Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration taken of relevant international safety standards and technical standards and of relevant experience gained."*
(3)	**BASIS: GSG-13 para. 3.61 states that** *"The process of developing regulations and guides should be described in procedures and should be sufficiently flexible to permit timely revisions to be made to take account of changes in technological, legal and practical conditions."*
SF3	**Suggestion: The Commonwealth Government, in conjunction with State and Territory Governments should consider establishing additional binding mechanism to ensure consistent and timely implementation of NDRP2 across Australia.**

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES
Observation: Many codes and guides exist, however the RHC has not completed a holistic review of the national regulatory framework to ensure it is comprehensive and provides adequate coverage

commensurate with the radiation risks associated with the facilities and activities. This work is currently underway.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 32, para. 4.63 states that** "*…The regulations and guides shall be kept consistent and comprehensive, and shall provide adequate coverage commensurate with the radiation risks associated with the facilities and activities, in accordance with a graded approach"*.
S10	**Suggestion: ARPANSA, in conjunction with the State and Territory regulatory bodies, should consider completing a review of the regulatory framework and prioritizing identified gaps to ensure that it is comprehensive and provides adequate coverage commensurate with the radiation risks associated with the facilities and activities in accordance with a graded approach**

Changes since the initial IRRS mission

Suggestion 10: The initial review of the Radiation Protection Series (RPS) by RHC and subsequent prioritisation of identified gaps was largely undertaken from 2019 to 2020.

The COVID-19 pandemic significantly impacted the work programme. Work on reviewing the RPS codes remains underway, with resources currently focused on four working groups which are reviewing RPS codes in relation to dental (RPS10), radiation gauges (RPS 5 and 13), X-ray equipment (RPS 9, 21 and 22), and consideration of a new well-logging code. This has provided opportunities to discuss the structure of annexes covering radiation monitoring, safety assessment, area signage, equipment standards, storage, and training and duties. Such a structure will help in improving consistency across RPS documents and facilitating a modular approach for development and review.

Following the announcement of the AUKUS partnership, ARPANSA was tasked to review the national framework for radiation and nuclear safety standards and guidance to ensure, with updates whenever necessary, its suitability for nuclear-powered submarines. To this end, ARPANSA has recently commenced a further review of the RPS in cooperation with the Department of Defence and other key stakeholders, to identify how radiation safety codes and standards can be incorporated into the RPS framework, reflecting this significant change in the regulatory landscape of Australia.

Status of Suggestion 10

Suggestion 10 (S10) remains open. Although the strategy to prioritise and review the publications considering the identified gaps and in accordance with a graded approach is in place, significant work still lays ahead, given the AUKUS partnership.

9.2. REGULATIONS AND GUIDES FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the original IRRS mission.

9.3. REGULATIONS AND GUIDES FOR RESEARCH REACTORS

There were no findings in this area in the original IRRS mission.

9.4. REGULATIONS AND GUIDES FOR WASTE MANAGEMENT FACILITIES

There were no findings in this area in the original IRRS mission.

9.5. REGULATIONS AND GUIDES FOR DECOMMISSIONING ACTIVITIES

There were no findings in this area in the original IRRS mission.

9.6. REGULATIONS AND GUIDES FOR TRANSPORT

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Some States apply an outdated version of the Code for the Safe Transport of Radioactive Material, which may lead to conflicts during transport crossing more than one jurisdiction or including air or international sea shipments. Additionally, in several jurisdictions, the Code is introduced not as regulation but as condition of transport-related licences. This creates a risk that not all operations included in the scope of the IAEA Transport Regulations SSR-6 are adequately addressed.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained."*
(1)	**BASIS: SSR-6 Para 106 states that** *"These Regulations apply to the transport of radioactive material by all modes on land, water, or in the air, including transport that is incidental to the use of the radioactive material. Transport comprises all operations and conditions associated with, and involved in, the movement of radioactive material; these include the design, manufacture, maintenance and repair of packaging, and the preparation, consigning, loading, carriage including in-transit storage, shipment after storage, unloading and receipt at the final destination of loads of radioactive material and packages"*
R15	**Recommendation: Regulatory bodies should ensure that their regulations for the safe transport of radioactive material align with the latest revision of the Code for the Safe Transport of Radioactive Material (Radiation Protection Series C-2) and ensure that these regulations apply to all operations specified in the scope of the IAEA Regulations for the Safe Transport of Radioactive Material SSR-6.**

Changes since the initial IRRS mission

Recommendation 15: The updated Australian Code for the Safe Transport of Radioactive Material (RPS C-2) (Rev 1) adopts (and reflects the changes to) the IAEA SSR-6 Rev. 1 (2018). This Code was published in 2019 and included within NDRP2, which was published in 2021 and agreed to by all jurisdictional health ministers.

Nearly all jurisdictions confirmed that they had either modified their regulations or will have soon completed the update of all licences by inserting licence conditions requiring implementation of RPS C-2 (Rev 1).

Status of Recommendation 15

Recommendation 15 (R15) is closed on the basis of progress made and confidence in effective completion in due time. The RPS C-2 has been updated (Rev 1) to be consistent with SSR-6 and is already or will soon be applicable in all jurisdictions.

10. EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS

10.1. AUTHORITY AND RESPONSIBILITIES FOR REGULATING ON-SITE EPR OF OPERATING ORGANIZATIONS

There were no findings in this area in the original IRRS mission.

10.2. REGULATIONS AND GUIDES ON ON-SITE EPR OF OPERATING ORGANIZATIONS

There were no findings in this area in the original IRRS mission.

10.3. VERIFYING THE ADEQUACY OF ON-SITE EPR OF OPERATING ORGANIZATIONSORGANIZATIONS

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA observes some emergency exercises at the ANSTO facilities as part of the inspection process and as site visits but no criteria to evaluate these exercises have been developed and there is limited input into the scope of the exercises to ensure all aspects of the emergency plan are exercised. This has been partly recognised in the ARM.	
(1)	**BASIS: GSR Part 7 para. 6.30 states that** *"Exercise programmes shall be developed and implemented to ensure that all specified functions required to be performed for emergency response, all organizational interfaces for facilities in category I, II or III, and the national level programmes for category IV or V are tested at suitable intervals. These programmes shall include the participation in some exercises of, as appropriate and feasible, all the organizations concerned, people who are potentially affected, and representatives of news media. The exercises shall be systematically evaluated (see para. 4.10(h)) and some exercises shall be evaluated by the regulatory body. Programmes shall be subject to review and revision in the light of experience gained (see paras 6.36 and 6.38)."*
(2)	**BASIS: GSR Part 7 para. 6.33 states that "***The conduct of exercises shall be evaluated against pre-established objectives of emergency response to demonstrate that identification, notification, activation and response actions can be performed effectively to achieve the goals of emergency response (see para. 3.2)."*
R16	**Recommendation: ARPANSA should develop criteria for evaluation of licensee exercises, to include the observation of exercises as part of the inspection process and ensure that licensees exercise all aspects of their emergency plan over an agreed time period and in line with a graded approach.**

Changes since the initial IRRS mission

Recommendation 16: ARPANSA has drafted a document setting out objectives of emergency response and supporting criteria for assessing licensee exercises. An inspection report template and a procedure for inspectors on how to observe and evaluate emergency exercises conducted by ARPANSA licence holders have also been developed. The IRRS team noted that the inspection report template does not currently reference the criteria for assessing exercises. The review and finalisation of these documents will be performed in accordance with ARPANSA's internal procedure and will include consultation with relevant ARPANSA staff and licensees. Once the documents are approved, implementation of the new procedure

will commence. An implementation plan has been prepared which includes the use of a pilot programme to test the effectiveness of the new procedure followed by a review and revision of the criteria, procedure and inspection report template. Inspectors will be provided with training in the new procedure.

The IRRS team was informed that ARPANSA is committed to having a greater oversight of licensee exercises, primarily at Emergency Preparedness Category II facilities (OPAL, ANM and ANSTO Health), in line with a graded approach. In the procedure for observing and evaluating emergency exercises there is a requirement for the lead inspectors for a licensed facility to routinely review the scope, scale and details of the licensee's exercise programme in conjunction with the licensee.

Status of Recommendation 16

Recommendation 16 (R16) is closed on the basis of progress made and confidence in effective completion in due time as ARPANSA has clear plans to finalise the procedure to evaluate and give greater oversight of licensees' exercises.

10.4. ROLES OF THE REGULATORY BODY IN A NUCLEAR OR RADIOLOGICAL EMERGENCY

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The roles and responsibilities of ARPANSA in emergency preparedness and response have not been clearly assigned for nuclear and radiological emergencies. The mechanism for the coordination of response between ARPANSA and the regulatory bodies in the States Territories during emergency response is not always defined or practised.	
(1)	**BASIS: GSR Part 7 para. 4.7 states that** *"The government shall ensure that all roles and responsibilities for preparedness and response for a nuclear or radiological emergency are clearly allocated in advance among operating organizations, the regulatory body and response organizations."*
(2)	**BASIS: GSR Part 7 para. 6.30 states that** "*Exercise programmes shall be developed and implemented to ensure that all specified functions required to be performed for emergency response, all organisational interfaces for facilities in category I, II or III, and the national level programmes for category IV or V are tested at suitable intervals."*
R17	**Recommendation: The Commonwealth Government, in conjunction with State and Territory Governments should ensure that the roles and responsibilities of ARPANSA in emergency preparedness and response both for incidents involving its own licensees and for incidents in the States and Territories are clearly assigned and exercised.**

Changes since the initial IRRS mission

Recommendation 17: The roles and responsibilities of ARPANSA in emergency preparedness and response have been clarified in several plans including the Domestic Health Response Plan for Chemical, Biological, Radiological or Nuclear Incidents of National Significance, the Australian Government Crisis Management Framework, the Australian Government Disaster Response Plan and the Guide for Radiation Protection in Emergency Exposure Situations.

In the Australian Government Disaster Response Plan, ARPANSA's role as the competent authority under the IAEA convention on early notification as well as ARPANSA's role to provide specialist technical advice and operational field support during a nuclear or radiological incident is set out. This is an all-hazards plan that is regularly tested in response to real events such as bush fires and floods. This plan was successfully implemented in January 2023 in response to a missing radiation source incident in Western Australia. However, it is recognised that the plan could be improved for the response to high-impact low-frequency events. The Australian Government Crisis Management Framework is currently undergoing a significant review by the Commonwealth Government Crisis Arrangements Committee of which ARPANSA is a current member.

The IRRS team noted that clarity on ARPANSA's roles and responsibilities in emergency preparedness and response will need to be maintained as the regulatory landscape changes to support the AUKUS partnership.

Status of Recommendation 17

Recommendation 17 (R17) is closed as the roles and responsibilities of ARPANSA in emergency preparedness and response have been clearly assigned and tested in exercises and in response to real events.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Staff are not formally assigned response roles in advance in ARPANSA's Incident Management Plan. While emergency exercises are held, there is no system in place to evaluate lessons learned and update plans and procedures accordingly. Not all elements of ARPANSA's Incident Management Plan are exercised.	
(1)	**BASIS: GSR Part 7 para. 6.28 states that** *"The operating organization and response organizations shall identify the knowledge, skills and abilities necessary to perform the functions specified in Section 5. The operating organization and response organizations shall make arrangements for the selection of personnel and for training to ensure that the personnel selected have the requisite knowledge, skills and abilities to perform their assigned response functions. The arrangements shall include arrangements for continuing refresher training on an appropriate schedule and arrangements for ensuring that personnel assigned to positions with responsibilities in an emergency response undergo the specified training."*
(2)	**BASIS: GSR Part 7 para. 6.30 states that** "*Exercise programmes shall be developed and implemented to ensure that all specified functions required to be performed for emergency response, all organizational interfaces for facilities in category I, II or III, and the national level programmes for category IV or V are tested at suitable intervals."*
(3)	**BASIS: GSR Part 7 para. 6.38 states that** *"The operating organization and response organizations shall make arrangements to review and evaluate responses in actual events and in exercises, in order to record the areas in which improvements are necessary and to ensure that the necessary improvements are made (see Requirement 19)."*
R18	**Recommendation: ARPANSA should strengthen its Incident Management Plan by assigning roles and responsibilities, ensuring all elements of the Plan are tested and addressing lessons learned following exercises or real events.**

Changes since the initial IRRS mission

Recommendation 18: ARPANSA informed the IRRS team that a decision was made that the Incident Management Plan which was in place during the initial IRRS mission was not fit for purpose as the threshold for activation was too high. To address this, ARPANSA adopted the Australasian Interservice Incident Management System (AIIMS) and applied it to ARPANSA's Incident Management Framework which is used across ARPANSA for the management of all health and safety, security, business continuity and nuclear and radiological incidents. Four training sessions in AIIMS have been delivered by accredited trainers to approximately 60 ARPANSA staff. Following training, staff are assigned one or more roles in emergency response in line with their area of expertise.

The Incident Management Framework is a high-level document. It does not provide detailed descriptions of response actions and states that these will be contained in other response plans and procedures that will be consistent with the framework". ARPANSA has emergency response plans and procedures in place but the terminology in them needs to be updated to be consistent with the framework. As plans and procedures are updated, they will be incorporated into ARPANSA's Management System. ARPANSA's exercise schedule is managed using group calendars to record major exercises such as those in the ConvEx and INEX series, projects and events. When real incidents occur, these may be used as a substitute for an exercise.

An incident management software system has been introduced to manage the response to exercises and real events in line with AIIMS including the tracking of actions to address lessons learned. It is also currently being used in ARPANSA as part of a pilot programme with some staff to record routine day-to-day health and safety and business continuity incidents. It will be rolled out to all staff in due course. ARPANSA provided evidence of the use of the system in response to both exercises and real events.

Status of Recommendation 18:

Recommendation 18 (R18) is closed as ARPANSA has clarified and strengthened its emergency response arrangements through the implementation of its Incident Management Framework.

New good practice from the follow-up mission

FOLLOW UP RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANSA has introduced an incident management system for responding to exercises and real incidents. It is also currently being used in a pilot programme with some staff to record routine health and safety and business continuity incidents with the intention of including all staff in ARPANSA in the future.	
(1)	**BASIS: GSR Part 7 Requirement 23 para 6.20 states that** *"The operating organization and response organizations shall develop the necessary procedures and analytical tools to be able to perform the functions specified in Section 5 for the goals of emergency response to be achieved and for the emergency response to be effective."*
(2)	**BASIS: GSR Part 7 Requirement 26 para 6.37 states that** *"The operating organization and response organizations shall establish and maintain adequate records in relation to both emergency arrangements and the response to a nuclear or radiological emergency, to include dose assessments, results of monitoring and inventory of radioactive waste*

FOLLOW UP RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	managed, in order to allow for their review and evaluation. These records shall also provide for the identification of those persons requiring longer term medical actions, as necessary, and shall provide for the long-term management of radioactive waste."
GPF2	**Good Practice: The use of an incident management system across ARPANSA for routine recording of health and safety incidents will ensure that staff are familiar with the system and will use it effectively to manage the response to a nuclear or radiological emergency**.

11. ADDITIONAL AREAS

11.1. CONTROL OF MEDICAL EXPOSURES

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The Code of Practice RPS 14 requires and establishes DRL for radiodiagnostic and nuclear medicine diagnostic practices, however, DRL for interventional and other procedures are not yet established. This is identified in the action plan of ARPANSA and encompassed in the draft *Code for Radiation Protection in Medical Exposure*, (RPS C-5).	
(1)	**BASIS: GSR Part 3 Requirement 34 para. 3.148 states that** *"The government shall ensure, as part of the responsibilities specified in para. 2.15, that as a result of consultation between the health authority, relevant professional bodies and the regulatory body, a set of diagnostic reference levels is established for medical exposures incurred in medical imaging, including image guided interventional procedures. In setting such diagnostic reference levels, account shall be taken of the need for adequate image quality, to enable the requirements of para. 3.169 to be fulfilled. Such diagnostic reference levels shall be based, as far as possible, on wide scale surveys or on published values that are appropriate for the local circumstances."*
R19	**Recommendation: ARPANSA, in collaboration with professional bodies, should establish DRLs for medical exposures incurred in medical imaging, including image guided interventional procedures, where practicable.**

Changes since the initial IRRS mission

Recommendation 19: ARPANSA maintains an ongoing diagnostic reference level (DRL) programme. Data has been collected by surveys and DRLs have been published on ARPANSA's National Diagnostic Reference Level Service website in collaboration with professional bodies. DRLs are presently available for image-guided and interventional procedures (IGIP), nuclear medicine, positron emission tomography, and computed tomography. Although Victoria has not enacted the *Code for Radiation Protection in Medical Exposure (2019) (RPS C-5) (the Medical Code)* and is still using the *RPS 14*, up to date DRL values are used as RPS 14 refers to DRLs "established in Australia".

Status of Recommendation 19

Recommendation (R19) is closed as DRLs are established for medical exposures incurred in medical imaging, including image guided interventional procedures.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The qualification of professionals engaged in the use of radiation sources for medical purposes is specified in the relevant regulatory guidance. However, their competency requirements with respect to radiation protection and safety are not specified.	
(1)	**BASIS: GSR Part 3 Requirement 3 para. 2.32 states that** *"The regulatory body shall ensure the application of the requirements for education, training, qualification and competence in*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
	protection and safety of all persons engaged in activities relevant to protection and safety."
(2)	**BASIS: GSR Part 3 Requirement 35 para. 3.150 states that** *"The regulatory body shall ensure that the authorization for medical exposures to be performed at a particular medical radiation facility allows personnel (radiological medical practitioners, medical physicists, medical radiation technologists and any other health professionals with specific duties in relation to the radiation protection of patients) to assume the responsibilities specified in these Standards only if they:* *(a) Are specialized in the appropriate area;* *(b) Meet the respective requirements for education, training and competence in radiation protection, in accordance with para. 2.32;"*
(3)	**BASIS: SSG 46 para 2.123 states that** *"The institutes and organizations that provide education and training in radiation protection to health professionals should use GSR Part 3 [3] and this Safety Guide as resources on the requirements for radiation protection and safety in medical uses of radiation."*
S11	**Suggestion: The Governments should consider developing common competency requirements for relevant medical professionals in radiation protection and safety and ensuring consistent application across the jurisdictions.**

Changes since the initial IRRS mission

Suggestion 11: The Australian Health Practitioner Regulation Agency (AHPRA) is committed to ensuring that Australia's registered health practitioners are suitably trained and qualified to practise safely. The Medical Radiation Practice Board (MRPB) of Australia has published a range of professional capabilities for medical radiation practice, recognising the various roles that a practitioner undertakes, including, *inter alia,* the medical radiation safety expert. This guidance was published in 2020. These activities are covered under the AHPRA Health Practitioner National Law adopted by all the jurisdictions.

Furthermore, the MRPB established the Medical Radiation Practice Accreditation Committee (the Accreditation Committee) to exercise several accreditation functions for medical professionals under the Health Practitioner Regulation National Law which is in force in each state and territory (the National Law).

Status of Suggestion 11

Suggestion 11 (S11) is closed, as competency requirements for relevant medical professionals in radiation protection and safety have been developed under the Health Practitioner Regulation National Law adopted by all the jurisdictions.

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The current RPS 14 is not consistent with the requirements as per IAEA Safety Standards GSR Part 3 in relation to medical exposure control. Missing requirements include establishing requirements for sufficiency of medical and paramedical personnel, independent audits and periodicity of QA programmes, calibration of non-radiotherapy equipment, availability of national referral guidelines, period of maintenance of relevant records. This has been partly recognized in the ARM and is part of the action plan. A new code, RPS C-5, is being developed to replace RPS 14. The proposed revision will address many of the requirements as per GSR Part 3.	
(1)	**BASIS: GSR Part 1 (Rev 1) Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained."*
(2)	**BASIS: GSR Part 3 Requirement 36, para. 3.154 (c), (e) states that** *"Registrants and licensees shall ensure that:* *(c) Sufficient medical personnel and paramedical personnel are available as specified by the health authority* *(e) For diagnostic radiological procedures and image guided interventional procedures, the requirements of these Standards for medical imaging, calibration, dosimetry and quality assurance, including the acceptance paras 3.167, 3.168(a) and (b), 3.169, 3.170 and 3.171, are fulfilled by or under the oversight of or with the documented advice of a medical physicist, whose degree of involvement is determined by the complexity of the radiological procedures and the associated radiation risks".*
(3)	**BASIS: SSG-46 para. 2.54 states that** *"Adequate numbers of radiological medical practitioners, medical radiation technologists, medical physicists and other health professionals with responsibilities for patient radiation protection should be available for a medical radiation facility to function correctly and safely. This includes sufficient capacity to cover absences of key personnel through sickness, leave or other reasons. The health authority, through its policy making role, should set clear standards for acceptable medical practice."*
(4)	**BASIS: GSR Part 3 Requirement 41, para. 3.179 (d) states that** *" Registrants and licensees, in accordance with the relevant requirements of paras 2.51, 3.41–3.42 and 3.49–3.50, shall ensure that all practicable measures are taken to minimize the likelihood of unintended or accidental medical exposures arising from flaws in design and operational failures of medical radiological equipment, from failures of and errors in software, or as a result of human error …"*
(5)	**BASIS: GSR Part 3 Requirement 42, para. 3.183 (b) states that** *"Registrants and licensees shall maintain for a period as specified by the regulatory body and shall make available, as required, the following personnel records :* *b) Records of training of personnel in radiation protection (as required in para. 3.150(b))*
(6)	**BASIS: GSR part 3 Requirement 42 para 3.184 states that "***Registrants and licensees shall maintain for a period as specified by the regulatory body and shall make available, as required, the following records of calibration, dosimetry and quality assurance……(a) records of results of the calibrations……..(d) Records associated with the quality assurance programme, as required in para. 3.171(d)."*

2018 RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(7)	**BASIS: GSR part 3 Requirement 38 para 3.172 states that** *"Registrants and licensees shall ensure that regular and independent audits are made of the programme of quality assurance for medical exposures, and that their frequency is in accordance with the complexity of the radiological procedures being performed and the associated risks."*
(8)	**BASIS: GSR part 3 Requirement 37 para 3.158 states that "***Relevant national or international referral guidelines shall be taken into account for the justification of the medical exposure of an individual patient in a radiological procedure."*
(9)	**BASIS: GSR part 3 para 3.169:** Registrants and licensees shall ensure that …. *A review is conducted to determine whether the optimization of protection and safety for patients is adequate, or whether corrective action is required if, for a given radiological procedure …(ii) Typical doses or activities fall substantially below the relevant diagnostic reference level and the exposures do not provide useful diagnostic information or do not yield the expected medical benefit to the patient.*
R20	**Recommendation: The Governments should ensure the new Code for Radiation Protection in Medical Exposure is consistent with IAEA Safety Standards GSR Part 3 and take steps to adopt and implement it.**

Changes since the initial IRRS mission

Recommendations R20: The *Code for Radiation Protection in Medical Exposure (2019) (RPS C-5)* (the Medical Code) has been developed to replace the *Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation (ARPANSA 2008a) (RPS 14*) which was not consistent with the IAEA Safety Standards GSR Part 3 requirements in relation to medical exposure.

RPS C-5 addresses all the requirements of the IAEA Safety Standards GSR Part 3 in relation to medical exposure. However, it does not include a requirement that sufficient medical personnel and paramedical personnel are available as should be specified by the health authority (GSR Part 3 Requirement 36 para. 3.154 (c)). This was not seen as an appropriate requirement to include in the code because of the specificity of the medical environment in the different States and Territories. The IRRS team was informed that, depending on the State or Territory, the availability of sufficient medical personnel can be required through different mechanisms such as practice accreditation, licence conditions and limits, the management plan or the radiation protection plan of the authorized medical facilities.

ARPANSA's Radiation Health Committee endorsed *RPS C-5* in March 2019, and the document was published in July 2019. Health Ministers subsequently endorsed it in 2021. *RPS C-5* was referenced in the second edition of the National Directory for Radiation Protection (NDRP2), agreed by all jurisdictional Health Ministers, and published in 2021.

RPS C-5 has been adopted by all jurisdictions, except Victoria which is still using *RPS 14*.

To support ongoing adoption of *RPS C-5*, the Radiation Health Committee is developing regulatory expectations documents for diagnostic and interventional radiology, for nuclear medicine, and for radiation therapy as guidance material.

Status of Recommendation 20:

Recommendation 20 (R20) is closed as the Code for Radiation Protection in Medical Exposure (RPS C-5) is consistent with IAEA Safety Standards GSR Part 3 and the Governments have taken steps to adopt and implement it.

11.2. OCCUPATIONAL RADIATION PROTECTION

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: ARPANS Regulations do not provide specific dose limits for apprentices and students from 16 to 18 years of age; and requirements on the exposure of aircrew due to cosmic radiation. Additionally, they do not require that the conditions of service of workers have to be independent of whether they are or could be subject to occupational exposure and that no compensatory arrangements or preferential considerations can exist; health surveillance for exposed workers; authorization or approval of dosimetry services for the exposed workers. This has been partly recognized in the ARM and is part of the Action Plan.	
(1)	**BASIS: GSR Part 3 Schedule III states that** *" For occupational exposure of apprentices of 16 to 18 years of age who are being trained for employment involving radiation and for exposure of students of age 16 to 18 who use sources in the course of their studies, the dose limits are:* *(a) An effective dose of 6 mSv in a year;* *(b) An equivalent dose to the lens of the eye of 20 mSv in a year;* *(c) An equivalent dose to the extremities (hands and feet) or to the skin of 150 mSv in a year."*
(2)	**BASIS: GSR Part 3 Requirement 27 Para 3.111 states that** *"The conditions of service of workers shall be independent of whether they are or could be subject to occupational exposure. Special compensatory arrangements, or preferential consideration with respect to salary, special insurance coverage, working hours, length of vacation, additional holidays or retirement benefits, shall neither be granted nor be used as substitutes for measures for protection and safety in accordance with the requirements of these Standards."*
(3)	**BASIS: GSR Part 3 Requirement 52 para 5.30 states that** *" The regulatory body or other relevant authority shall determine whether assessment of the exposure of aircrew due to cosmic radiation is warranted."*
(4)	**BASIS: GSR Part 3 Requirement 52 para 5.31 states that** *" Where such assessment is deemed to be warranted, the regulatory body or other relevant authority shall establish a framework which shall include a reference level of dose and a methodology for the assessment and recording of doses received by aircrew from occupational exposure to cosmic radiation."*
(5)	**BASIS: GSR Part 3 Requirement 25 states that** *"Employers, registrants and licensees shall be responsible for making arrangements for assessment and recording of occupational exposures and for workers' health surveillance".*
(6)	**BASIS: GSR Part 3 Requirement 20 subparagraphs 3.73 (a) and (c) states that** *"The regulatory body shall be responsible, as appropriate, for: (a) … (c) Authorization or approval of service providers for individual monitoring and calibration services"*
R21	**Recommendation: ARPANSA, in conjunction with State and Territory regulatory bodies, should revise the current requirements on occupational radiation protection to ensure compliance with IAEA Safety Standards GSR Part 3.**

Changes since the initial IRRS mission

Recommendation 21: The *Code for Radiation Protection in Planned Exposure Situations, RPS C-1 (Rev.1)* (the Planned Exposure Code) has been revised, based on the IAEA Safety Standards GSR Part 3 requirements in relation to occupational exposure. *RPS C-1* (Rev.1) was approved by the Radiation Health Committee in 2019 and published in 2020.

RPS C-1 (Rev.1) has been adopted by all the jurisdictions.

RPS C-1 (Rev.1) establishes dose limits for the 16 to under 18 years age group.

RPS C-1 (Rev.1) does not include conditions of service as required by the IAEA Safety Standards GSR Part 3, Requirement 27, para 3.111. The IRRS Team was informed that the Work Health and Safety Act 2011 states that any term of a contract that seeks to exclude, limit or modify the operation of any duty owed is rendered void. This includes contract terms that offer conditions to workers as a substitute for measures for protection and safety.

Exposure of aircrew to cosmic radiation procedures is considered in the ARPANSA *Guide for Radiation Protection in Existing Exposure Situations* (2017) (RPS G-2) as required by the IAEA Safety Standards GSR Part 3, Requirement 27.

RPS C-1 (Rev.1) does not include requirements for workers' health surveillance. The IRRS Team was informed that there is no legal requirement on this topic in Australia, whatever the professional activity. However, during the initial IRRS mission in 2018, the IRRS Team was informed that medical surveillance of exposed workers is performed on a case-by-case basis, based on a risk assessment.

RPS C-1 (Rev.1) does not include requirements for authorisation or approval of dosimetry service providers. RHC has been progressing with the development of a technical standard that, once published, could be used.

Status of Recommendation 21

Recommendations R21 (R21) is closed as the Code for Radiation Protection in Planned Exposure Situations, RPS C-1 has been revised to comply with IAEA Safety Standards GSR Part 3.

11.3. CONTROL OF RADIOACTIVE DISCHARGES, MATERIALS FOR CLEARANCE, AND EXISTING EXPOSURES SITUATIONS; ENVIRONMENTAL MONITORING FOR PUBLIC RADIATION PROTECTION

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The current licences issued by ARPANSA require notification to the regulator if certain levels are exceeded. However, the licences do not include a specific limit on discharges.	
(1)	**BASIS: GSR Part 3 Requirement 31: Para's 3.123 states that** *"The regulatory body shall establish or approve operational limits and conditions relating to public exposure, including authorized limits for discharges..."*
S12	**Suggestion: ARPANSA should consider applying nuclide specific discharge limits as part of the approved operating limits and conditions.**

Changes since the initial IRRS mission

Suggestion 12: For authorised facilities and activities, radioactive discharges are assessed on a case-by-case basis during the authorisation process and licence conditions include notification levels for the activity

of specific nuclides which, if reached, would result in a dose to the representative person of less than 20 µSv.

ARPANSA has considered the merits of establishing nuclide specific discharge limits and maintains that the current approach ensures early detection, reporting and corrective action, as appropriate.

Status of Suggestion 12

Suggestion 12 (S12) is closed as ARPANSA has considered the application of nuclide specific discharge limits as part of the approved operating conditions.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: There are no unified or agreed clearance levels for all radionuclides for use in Australia. While the draft NDRP (2nd Edition) proposes the use of the values as per GSR Part 3, this document has not yet been approved. This was acknowledged in the ARM and is part of the action plan.	
(1)	**BASIS: GSR Part 3 Requirements 8 states that** *"The government or the regulatory body shall determine which practices or sources within practices are to be exempted from some or all of the requirements of these Standards. The regulatory body shall approve which sources, including materials and objects, within notified practices or authorized practices may be cleared from regulatory control."*
R22	**Recommendation: The Commonwealth Government, in conjunction with the State and Territory Governments, should progress the adoption and implementation of uniform clearance levels.**

Changes since the initial IRRS mission

Recommendation 22: The Second Edition of the National Directory for Radiation Protection (NDRP2), published in 2021, establishes national arrangements for managing radioactive sources, including clearance levels.

Jurisdictions agree to clear from regulatory control those sources, including materials and objects, within notified or authorized practices, in accordance with Requirement 8, paragraph 3.12 of IAEA GSR Part 3.

The uniform clearance levels set out in NDRP2 have been enacted by all the jurisdictions, except one. The IRRS team was informed that in that jurisdiction, exemption levels are also used as clearance levels.

Status of Recommendation 22

Recommendation 22 (R22) is closed as the Commonwealth Government, in conjunction with the State and Territory Governments, has made progress in the adoption and implementation of uniform clearance levels.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES
Observation: ARPANSA does not undertake independent monitoring of operator discharges into the environment. This has been recognized in the ARM and is part of the action plan.

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
(1)	**BASIS: "GSR Part 3 Requirement 32 Para 3.135 states that** *"The regulatory body shall be responsible, as appropriate, for…. (c) Making provision for an independent monitoring programme. (d) Assessment of the total public exposure due to authorized sources and practices in the State on the basis of monitoring data provided by registrants and licensees and with the use of data from independent monitoring and assessments."*
(2)	**BASIS: RS-G-1.8 Environmental and Source Monitoring for Purposes of Radiation Protection, Section 5.6 states that** *"….the monitoring programme should pay particular attention to the critical pathways and the critical radionuclides."*
R23	**Recommendation: ARPANSA should make provision for an independent monitoring programme to confirm the monitoring results submitted by licensees and should consider basing the programme on an assessment of the nuclides that make a major contribution to public dose.**

Changes since the initial IRRS mission

Recommendation 23: ARPANSA has developed an independent monitoring and verification programme for the ANSTO site to confirm the monitoring results submitted by ANSTO.

As part of the programme implementation, ARPANSA reviewed and assessed ANSTO sampling and analysis procedures for all sample types. All procedures were considered fit-for-purpose.

An independent on-site measurement is made by ARPANSA on ANSTO's Lucas Heights facility every 6 months. Off-site samples are collected annually and analysed by ARPANSA.

The nuclides of interest for analysis were selected based on the operations, the possible atmospheric discharges from stacks and the potential public exposure pathways of these discharges.

ARPANSA continues to review and refine the independent monitoring programme. The ongoing review includes an assessment of the nuclides that should be reported as well as notification and reporting levels for each sample type. ARPANSA is also considering improving the oversight of the sampling phase at ANSTO's Lucas Heights facility.

The independent monitoring programme may be extended to include additional nuclear facilities in Australia.

Status of Recommendation 23

Recommendation 23 (R23) is closed as ARPANSA has implemented an independent monitoring programme which includes an assessment of the nuclides that make a major contribution to public dose.

12. INTERFACE WITH NUCLEAR SECURITY

12.1. LEGAL BASIS

There were no findings in this area in the original IRRS mission.

12.2. REGULATORY OVERSIGHT ACTIVITIES

There were no findings in this area in the original IRRS mission.

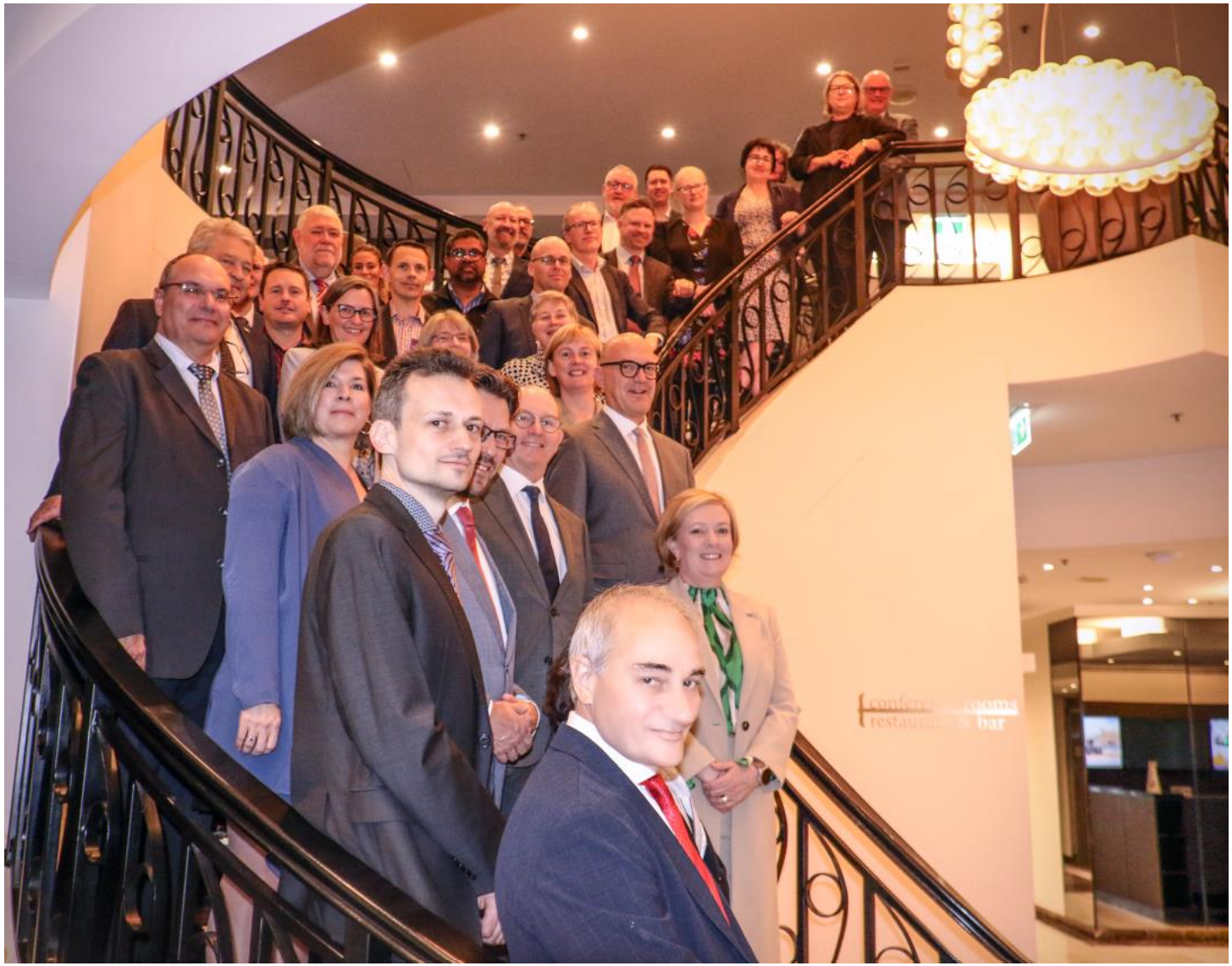
12.3. INTERFACE AMONG AUTHORITIES

There were no findings in this area in the original IRRS mission.

APPENDIX I – LIST OF PARTICIPANTS

INTERNATIONAL EXPERTS			
1.	TIIPPANA Petteri	Radiation and Nuclear Safety Authority (STUK), FINLAND	petteri.tiippana@stuk.fi
2	DUDES Laura	U.S. Nuclear Regulatory Commission (USNRC), UNITED STATES OF AMERICA	laura.dudes@nrc.gov
3.	SANTINI Miguel		miguelsantini@gmail.com
4.	FERON Fabien	Autorité de Sûreté Nucléaire (ASN), FRANCE	fabien.feron@asn.fr
5.	SMITH Veronica	Environmental Protection Agency, IRELAND	v.smith@epa.ie
6.	PERRIN Marie Line		marie-line.perrin@wanadoo.fr
7.	BARLOW Ian	Office for Nuclear Regulation (ONR), UNITED KINGDOM	ian.barlow@onr.gov.uk
IAEA STAFF MEMBERS			
1.	MANSOUX Hilaire	Division of Radiation, Transport and Waste Safety	h.mansoux@iaea.org
2.	SOARE Gabriel	Division of Nuclear Installation Safety	g.soare@iaea.org
3.	OSTROUSKA Irena	Division of Radiation, Transport and Waste Safety	i.ostrouska@iaea.org
LIAISON OFFICER			
1.	NICKEL, Christopher	Senior Regulatory Officer Safety Systems and Regulatory Services Australian Radiation Protection and Nuclear Safety Agency	christopher.nickel@arpansa.gov.au

Group Photo



APPENDIX II – MISSION PROGRAMME

IRRS FOLLOW-UP MISSION PROGRAMME		
Sunday 15 October 2023		
15:00 - 17:00	**Initial team meeting:** • Opening remarks by the IRRS Team Leader • Introduction by IAEA • Self-introduction of all attendees • IRRS Process and report writing (IAEA) • Schedule (TL, IAEA) • First impression from team members arising from the Advanced Reference Material (ARM) (all Team members) • Administrative arrangements, detailed mission programme (ARPANSA Liaison Officer, IAEA) • Briefing on the use of MS Teams for drafting the report	Participants: IRRS Team, ARPANSA Liaison Office(LO) Venue : Hotel Mantra on Russell
18:30	Team dinner	Participants: all Venue : In town
Monday 16 October 2023		
09:00 – 11:00	**Entrance Meeting**, see detailed agenda	Participants: High Level Government Official, ARPANSA/ States and Territories Regulatory Bodies management and staff, LO, IRRS team Venue: Hotel Mantra
11:00 –13:00	Travel to ARPANSA, lunch	Participants: all Venue: ARPANSA HQ
13:00 – 17:00	Interviews, see ARPANSA logistics pack	Participants: all Venue: ARPANSA HQ
17;00 – 18:00	Daily team meeting	Participants: IRRS team, LO Venue: ARPANSA HQ
Tuesday 17 October 2023		
Daily Discussions / Interviews		
09:00 – 17:00	Reviewers/Counterparts discussions, see ARPANSA logistics pack	Participants: all Venue: ARPANSA HQ
17:00 – 18:00	Daily team meeting	Participants: IRRS team, LO Venue: ARPANSA HQ
Wednesday 18 October 2023		
Daily Discussions / Interviews		

09:00 – 16:00	Reviewers/Counterparts discussions, see ARPANSA logistics pack	Participants: all Venue: ARPANSA HQ
16:00 – 17:00	Preliminary findings drafting by reviewers	Participants: IRRS team
17:00 – 18:00	Daily team meeting: discussion of preliminary findings	Participants: IRRS Team, LO
Thursday 19 October 2023		
Daily Discussions / Interviews		
09:00 – 12:00	Reviewers/Counterparts discussions in parallel, if needed	Participants: all Venue: ARPANSA HQ
09:00 – 12:00	Report drafting by IRRS team	Participants: IRRS team Venue: ARPANSA HQ
13:00 – 17:00	Cross reading	Participants: IRRS team Venue: ARPANSA HQ
17:00 – 18:00	Daily team meeting	Participants: IRRS team, LO Venue: ARPANSA HQ
Friday 20 October 2023		
Daily Discussions/ Interviews (if needed)		
09:00 – 12:00	Finalisation of the report	Participants: IRRS team Venue: ARPANSA HQ
14:00	Submission of draft report to the Host	Participants: IRRS team Venue: ARPANSA HQ
Saturday 21 October 2023		
14:00 – 17:00	IRRS Team meeting to review the draft report with the comments from the Host. Drafting of press release	Participants: IRRS Team Venue: ???
Sunday 22 October 2023		
	Rest day, social event	Participants: all
Monday 23 October 2023		
09:00 – 12:00	Plenary discussion of the draft report	Participants: all Venue: ARPANSA HQ
13:00 – 17:00	Finalization of the report Finalization of press release	Participants: all Venue: ARPANSA HQ
Tuesday 24 October 2023		
14:00 – 16:00	Exit meeting, lunch	Participants: all Venue ARPANSA

APPENDIX III – LIST OF COUNTERPARTS

	IRRS EXPERTS	Lead Counterparts
1.		
	Laura DUDES	National Counterparts, Sam Usher (ARWA)
2.		
	Laura DUDES	National Counterparts
3.		
	Ian BARLOW and Gabriel SOARE	Jim Scott, John Ward, Nicole Coultes
4.		
	Ian BARLOW and Gabriel SOARE	National Counterparts, John Ward, Allister Prosser
5.		
	Miguel SANTINI and Fabien FERON	National Counterparts, Vaz Mottl
6.		
	Miguel SANTINI and Fabien FERON	National Counterparts, James Scott, Francesca Wigney, Samir Sakar
7.		
	Miguel SANTINI and Fabien FERON	National Counterparts

	IRRS EXPERTS	Lead Counterparts
8.		
	Miguel SANTINI and Fabien FERON	National Counterparts
9.		
	Miguel SANTINI and Fabien FERON	National Counterparts
10.		
	Veronica SMITH	Marcus Grzechnik
11.		
	Marie Line PERRIN	National Counterparts, Peter Thomas, Samir Sarkar, Cameron Lawrence

National Counterparts

Lead Counterpart	Jurisdiction
Stephen Bouwhuis	Department of Health and Aged Care
Stephen Beaman	NSW Environment Protection Authority
David Kruss	SA Environment Protection Authority

Hazel Upton	WA Radiological Council
Nehal Ahmed	Department of Health Tasmania
Simon Critchley	Queensland Health
Glenn Riley	Victoria Health
Penny Hill	ACT Health
Gillian Hirth	Australian Radiation Protection and Nuclear Safety Agency

APPENDIX IV – APPENDIX V- RECOMMENDATIONS (R) AND SUGGESTIONS (S) FROM THE PREVIOUS IRRS MISSION THAT REMAIN OPEN

Module	Section	R/S	Recommendations/Suggestions
1	**1.1**	S1	**The Commonwealth Government, in conjunction with State and Territory Governments, should consider formalizing the existing elements of the framework for safety into a comprehensive national policy and strategy for safety.**
1	**1.2**	R1	**The Commonwealth Government, in conjunction with State and Territory Governments, should ensure a consistent level of protection of people and the environment through effective coordination and harmonized implementation of codes and guides by the Commonwealth, States, Territories and regulatory bodies.**
1	**1.7**	R3	**The Commonwealth Government should establish a national policy and strategy for decommissioning of facilities.**
1	**1.7**	R4	**The Commonwealth Government, in conjunction with State and Territory Governments, should ensure that financial provisions are provided to enable the management of disused radioactive sources.**
1	**1.8**	R5	**The Governments should ensure that all parties having responsibilities for safety of facilities and regulatory activities have the necessary competence and resources to carry out their responsibilities.**
2	**2.1**	R6	**The Commonwealth Government, in conjunction with State and Territory Governments should ensure full implementation of the Code of Conduct on the Safety and Security of Radioactive Sources.**
2	**2.2**	R7	**Regulatory bodies should assess the need for updating regulatory requirements or guidance, review and assessment, inspection and licensing processes after considering the events reported in ARIR, especially the noteworthy events highlighted in the annual ARIR report.**

Module	Section	R/S	Recommendations/Suggestions
7	**7.2**	R13	**The State and Territory regulatory bodies should develop an inspection strategy and carry out a resource allocation assessment.**
9	**9.1**	S10	**ARPANSA, in conjunction with the State and Territory regulatory bodies, should consider completing a review of the regulatory framework and prioritizing identified gaps to ensure that it is comprehensive and provides adequate coverage commensurate with the radiation risks associated with the facilities and activities in accordance with a graded approach**

APPENDIX VI - RECOMMENDATIONS (RF), SUGGESTIONS (SF) AND GOOD PRACTICES (GPF) FROM THE 2023 IRRS FOLLOW UP MISSION

Module	Section	RF/SF/GPF	Recommendation, Suggestion or Good Practice
5	5.2	SF1	All regulatory bodies should consider further developing and using a formalized process for identifying lessons to be learned from regulatory experience from other jurisdictions and for sharing lessons learned from their regulatory experience, with the goal of making better use of existing regulatory resources and improving consistency across Australia.
6	6.2	SF2	ARPANSA should consider amending its inspection processes and practices to facilitate thematic inspections.
9	9.1	SF3	The Commonwealth Government, in conjunction with State and Territory Governments should consider establishing additional binding mechanism to ensure consistent and timely implementation of NDRP2 across Australia.
4	4.7	GPF1	ARPANSA has published on its public-facing website the results of its assessment of leadership for safety and safety culture.
10	10.4	GPF2	The use of an incident management system across ARPANSA for routine recording of health and safety incidents will ensure that staff are familiar with the system and will use it effectively to manage the response to a nuclear or radiological emergency.

APPENDIX VII – COUNTERPART'S REFERENCE MATERIAL USED FOR THE REVIEW

Australia 2023 Follow-up mission Advanced Reference Material – Summary Report

Supporting Evidence:

Reference	Document
R01-E1	(web) ACT Radiation Protection Act 2006
R01-E2	(web) QLD Radiation Safety Act 1999
R01-E3	(web) NSW legislation - Radiation Control Act-1990
R01-E4	(web) NT Radiation Protection Act 2004
R01-E5	(web) SA Radiation Protection and Control Act 2021
R01-E6	(web) Tasmanian Radiation Protection Act 2005
R01-E7	(web) Tasmanian Radiation Protection Regulations 2016
R01-E8	(web) VIC Radiation Act 2005
R01-E9	(web) WA Radiation Safety Act 1975
R01-E10	(web) National Directory for Radiation Protection (2nd edition; 2021)
R01-E11	(web) Annual summary reports of the Australian Radiation Incident Register _ ARPANSA
R02-E1	(web) Australian Radioactive Waste Agency (ARWA) _ Directory
R02-E2	(web) australian_radioactive_waste_management_framework
R02-E3	(web) ARWA Inventory Report 2021
R02-E4	(web) Budget 2023-24_ Budget promotes energy security and low-carbon future _ Ministe
R03-E1	Decommissioning Nuclear Facilities in Australia Scoping: Paper for National Decommissioning Strategy July 2021
R04-E1	Overview of Legeslative provisions
R04-E2	RHERP Minutes and Action items - 1 March 2023
R05-E1	(web) Environmental Health Standing Committee (enHealth) _ Australian Government Depa
R05-E2	(web) Australasian Radiation Protection Accreditation Board
R05-E3	(web) AHPRA
R05-E4	(web) Medical-Radiation-Practice-Board---Professional-capabilities-for-medical-radiat
R05-E5	(web) Medical-Radiation-Practice-Board---Accreditation-standards---April-2021
R05-E6	(web) Medical Radiation Practice Board of Australia - Accreditation Committee
R05-E7	(web) Medical-Radiation-Practice-Accreditation-Committee---Terms-of-Reference---July-
R05-E8	(web) Medical-Radiation-Practice-Board---Fact-sheet---Education-Providers
R05-E9	(web) Medical Radiation Practice Board of Australia - Continuing professional develop
R05-E10	(web) Australian Health Practitioner Regulation Agency - Legislation
R08-E1	ARPANSA Workforce Strategy 2022-25
R08-E2	RSB Workforce Plan-on-a-page.
R08-E3	SARCoN_SARCoN Framework for ARPANSA regulatory staff - Regulatory Officer
R08-E4	SARCoN Framework for ARPANSA regulatory staff - Senior Regulatory Officer
R08-E5	SARCoN_SARCoN Framework for ARPANSA regulatory staff - Director
R09-E1	ARPANSA-SOP-1902 Managing regulatory IMS documents & web content
R09-E2	ARPANSA-SOP-0330 Internal Audit

R09-E3	ARPANSA-SOP-0658 Non-conformance and Continuous improvement management
R10-E1	Safety culture assessments of ARPANSA 2018
R10-E2	Draft Work Health and Safety Framework revisions
R10-E8	2023 Safety Culture Assessment Procurement Plan
R10-E3	IAEA_SRS No. 83 Performing safety culture self-assessments
R10-E4	OECD NEA Report No 7247 The safety culture of an effective nuclear regulatory body
R10-E7	Australian Radiation Protection and Nuclear Safety Regulations 2018
R11-E0	Reg changes and Ansto actions
R11-E1	ANSTO Health Accident - Lessons to be Learned
R11-E2	Lessons for ARPANSA - project document
R11-E3	ARPANSA Review and Assessment Manual
R11-E4	Review of Inspection Performance Objectives and Criteria
R11-E5	ARPANSA Compliance Manual
R11-E6	Regulatory Guide - Radiation Incident Site Preservation
R11-E7	Regulatory Guide – Preparation of the safety analysis report for non-reactor facilities
R11-E11	ARPANSA's final approval of the implementation June 2023
R11-E12	Changes to the ARPANS Regulations 2018 to emphasise HOF
R11-E13	Regulatory Guide - Radiation incidents
R11-E14	RPS G-3 Guide for Radiation Protection in Emergency Exposure Situations Part 1
R11-E15	RPS G-3 Guide for Radiation Protection in Emergency Exposure Situations Part 2
R11-E16	(web) ARPANSA Inspection Manual
R12-E1	(web) Code for the Safe Transport of Radioactive Material (2019)
R12-E2	(web) Australian Dangerous Goods Code - 7.8
R13-E1	(web) State & territory regulators - ARPANSA
R13-E2	(web) Regulatory Activities Policy - ARPANSA
R13-E3	(web) NSW EPA risk based approach
R14-E1	ARPANSA Enforcement Policy
R16-E1	Criteria for assessing Licensee emergency exercises
R16-E2	Inspection POC for facilities v2 Sept 2022
R16-E3	(web) Guide for Radiation Protection in Emergency Exposure Situations (2019)
R16-E4	Exercise inspection report template - Draft
R16-E5	Procedure for evaluating licensee emergency exercises - Draft
R17-E1	(web) australian-government-crisis-management-framework
R17-E2	(web) domestic-health-response-plan-for-chemical-biological-radiological-or-nuclear-i
R17-E3	(web) COMDIS plan-disaster-response
R18-E1	ARPANSA– Incident Management Framework.
R18-E2	Staff Training Record - AIIMS
R18-E3	One-page Reminder of Roles for Each Function of AIIMS
R18-E4	Staff Possible Roles using AIIMS system
R19-E1	(web) National Diagnostic Reference Level Service (NDRLS) | ARPANSA
R19-E2	(web) National Diagnostic Reference Level Service (NDRLS) 2019 Newsletter
R19-E3	(web) DRLs for Image guided interventional procedures (IGIP) | ARPANSA
R19-E4	(web) DRLs for Nuclear medicine/PET | ARPANSA
R19-E5	(web) RPS C-5 Code for Radiation Protection in Medical Exposure
R19-E6	(web) MDCT DRL statistics Multi detector computed tomography statistics | ARPANSA
R19-E7	(web) DRLs for Multi detector computed tomography (MDCT) | ARPANSA

R19-E8	(web) arpansa_tr187 National Diagnostic Reference Level Service Year in Review 2020
R20-E1	(web) medical-exposure-code-rps-c-5
R20-E2	(web) Radiation Protection Series No. 14.1 | ARPANSA
R20-E3	(web) Radiation Protection Series No. 14.2 | ARPANSA
R20-E4	(web) Radiation Protection Series No. 14.3 | ARPANSA
R20-E5	(web) Protocol_Treatment-RadiationTherapy
R21-E1	DRAFT Standards for Dosimetry Service Providers
R21-E2	Advisory Statement: Occupational Compensatory Arrangements – Radiation Health Committee
R21-E3	(web) Radiation Protection Series C-1 (Rev. 1)
R21-E4	(web) Guide for Radiation Protection in Existing Exposure Situations – RPS G-2
R23-E6	(web) ARPANSA website public reporting of environmental monitoring
R23-E1	ANSTO Monitoring Program.
R23-E2	2020 Independent Monitoring Report
R23-E3	2021 Independent Monitoring report
R23-E4	MERS (RHS) Work Plan for 2022-23 under Service Level Agreement
R23-E5	RHS-RSB service level agreement - 2021
S01-E1	National Strategy (draft)
S01-E2	DRAFT RFQ for Review
S02-E1	(web) Arpans Act
S02-E2	(web) rhsac-roles-and-expectations-of-advisory-bodies
S02-E3	(web) Regulatory Activities Policy _ ARPANSA
S02-E6	(web) The Australian National Radiation Dose Register _ ARPANSA
S03-E5	(web) ARPANSA Inspection Manual-gde-1119
S03-E6	(web) ARPANSA Review and Assessment Manual-gde-1118
S03-E7	Compilation of details relating to State and Territory Reviews.
S04-E1	(web) Licence holder performance details on the ARPANSA website
S04-E2	(web) Regulatory Guide - plans and arrangements for managing safety (ARPANSA-GDE-1735
S04-E3	(web) Advisory Note_Consultation and engagement on public health; considerations for
S05-E2	web) user-guide-mutual-recognition-automatic-mutual-recognition-trans-tasman-mutual-r
S06-E1	(web) Regulatory Guide – Possess or Control and Extended Shutdown of a Facility or So
S06-E2	Outgoing email to LHs asking for comments on Regulatory guide for Possess or Control
S07-E1	(web) Regulatory Guide - Decommissioning of Controlled Facilities (ARPANSA-GDE-1731)
S07-E2	(web) rps_g-4 guide_for_classification_of_radioactive_waste
S07-E3	(web) rps16_Safety Guide for the Predisposal Management of Radioactive Waste
S07-E4	(web) rpsc-6 Code for Disposal of Radioactive Waste by the User
S07-E5	(web) rpsc3_Code for Disposal Facilities for Solid Radioactive Waste
S08-E1	Letter to OPAL amended Licence requiring a DEC Plan to be submitted Dec 2018
S08-E2	Letter to OPAL amending the Licence Condition to Require the DECs to be completed by
S08-E3	Letter to OPAL- Approval of the OPAL Design Extension Conditions
S08-E4	ARPANSA's regulatory review and approval of the DECs and SAR .
S08-E5	(web) IAEA SRS No. 80 Safety Reassessment for Research Reactors in the Light of the A
S08-E6	(web) Regulatory Guide – Preparation of the safety analysis report for non-reactor fa
S08-E7	(web) ARPANSA Regulatory assessment Report of the ANSTO Intermediate Level Waste Capacity Increase Facility Licence Application
S09-E1	(web) arrangement-between-the-environmental-health-standing-committee-and-the-austral

S09-E2	(web) RIS guide
S10-E1	Minutes and relevant papers of the RHC meeting for 12-13 March 2019
S10-E2	Minutes and relevant papers of the RHC meeting for 2-3 July 2019
S10-E3	Minutes and relevant papers of the RHC meeting for 13-14 November 2019
S10-E4	Minutes and relevant papers of the RHC meeting for 4-5 March 2020
S11-E8	(web) Regulatory Guide - Decommissioning of Controlled Facilities (ARPANSA-GDE-1731)

APPENDIX VIII – IAEA REFERENCE MATERIAL USED FOR THE REVIEW

This list has to be verified for each mission and adjusted according to scope of the mission.

1. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Fundamental Safety Principles, No SF-1, IAEA, Vienna (2006)
2. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1, No GSR Part 1 (Rev. 1), IAEA, Vienna (2016)
3. **INTERNATIONAL ATOMIC ENERGY AGENCY –** Leadership and Management for Safety, General Safety Requirements Part 2, No GSR Part 2, IAEA, Vienna (2016)
4. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements Part 3, No GSR Part 3, IAEA, Vienna (2014).
5. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Safety assessment for facilities and activities, General Safety Requirements Part 4, No GSR Part 4 (Rev. 1), IAEA, Vienna (2016)
6. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Predisposal Management of Radioactive Waste, General Safety Requirements Part 5, No GSR Part 5, IAEA, Vienna (2009)
7. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Decommissioning of Facilities, General Safety Requirements No GSR Part 6, IAEA, Vienna (2014)
8. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Preparedness and Response for Nuclear or Radiological Emergency, General Safety Requirements No GSR Part 7, IAEA, Vienna (2015)
9. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Site Evaluation for Nuclear Installations, Specific Safety Requirements No SSR-1, IAEA, Vienna (2003)
10. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Safety of Nuclear Power Plants: Design, Specific Safety Requirements No SSR-2/1 (Rev. 1), IAEA, Vienna (2016)
11. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Safety of Nuclear Power Plants: Commissioning and Operation, Specific Safety Requirements No SSR-2/2 (Rev. 1), IAEA, Vienna (2016)
12. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Safety of Research Reactors, Specific Safety Requirements No SSR-3, IAEA, Vienna (2016)
13. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Safety of Nuclear Fuel Cycle Facilities, Specific Safety Requirements No SSR-4, IAEA, Vienna (2017)
14. **INTERNATIONAL ATOMIC ENERGY AGENCY -** Disposal of Radioactive Waste, Specific Safety Requirements No SSR-5, IAEA, Vienna (2011)
15. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Regulations for the Safe Transport of Radioactive Material, 2018 Edition, Specific Safety Requirements No SSR-6 (Rev. 1), IAEA, Vienna (2018)
16. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Classification of Radioactive Waste, General Safety Guide No GSG-1, IAEA, Vienna (2009)
17. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Criteria for use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide No GSG-2, IAEA, Vienna 2011)
18. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Communication and Consultation with Interested Parties by the Regulatory Body, General Safety Guide No GSG-6, IAEA, Vienna (2017)
19. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Occupational Radiation Protection, Safety Guide No GSG-7, IAEA, Vienna (2018)
20. **INTERNATIONAL ATOMIC ENERGY AGENCY** - Regulatory Control of Radioactive Discharges to the Environment, Safety Guide No GSG-9, IAEA, Vienna (2018)

21. INTERNATIONAL ATOMIC ENERGY AGENCY - Organization, Management and Staffing of the Regulatory Body for Safety, General Safety Guide No GSG-12, IAEA, Vienna (2018)
22. INTERNATIONAL ATOMIC ENERGY AGENCY - Functions and Processes of the Regulatory Body for Safety, General Safety Guide No GSG-13, IAEA, Vienna (2018)
23. INTERNATIONAL ATOMIC ENERGY AGENCY Leadership, Management and Culture for Safety in Radioactive Waste Management, Safety Guide No GSG-16, IAEA, Vienna (2022)
24. INTERNATIONAL ATOMIC ENERGY AGENCY - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide No GS-G-2.1, IAEA, Vienna (2007)
25. INTERNATIONAL ATOMIC ENERGY AGENCY - Modifications to Nuclear Power Plants, Safety Guide No SSG-71, IAEA, Vienna (2022)
26. INTERNATIONAL ATOMIC ENERGY AGENCY - Recruitment, Qualification and Training of Personnel for Nuclear Power Plants, Safety Guide No NS-G-2.8, IAEA, Vienna (2002)
27. INTERNATIONAL ATOMIC ENERGY AGENCY - Environmental and Source Monitoring for Purposes of Radiation Protection, Safety Guide No RS-G-1.8, IAEA, Vienna (2005)
28. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide No RS-G-1.10, IAEA, Vienna (2008)
29. INTERNATIONAL ATOMIC ENERGY AGENCY - Borehole Disposal Facilities for Radioactive Waste, Safety Guide No SSG-1, IAEA, Vienna (2009)
30. INTERNATIONAL ATOMIC ENERGY AGENCY - Deterministic Safety Analysis for Nuclear Power Plants, Specific Safety Guides No SSG-2, IAEA, Vienna (2010)
31. INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No SSG-3, IAEA, Vienna (2010)
32. INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No SSG-4, IAEA, Vienna (2010)
33. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Conversion Facilities and Uranium Enrichment Facilities, Specific Safety Guide No SSG-5, IAEA, Vienna (2010)
34. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Uranium Fuel Fabrication Facilities Specific Safety Guide No SSG-6, IAEA, Vienna (2010)
35. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Uranium and Plutonium Mixed Oxide Fuel Fabrication Facilities, Specific Safety Guide No SSG-7, IAEA, Vienna (2010)
36. INTERNATIONAL ATOMIC ENERGY AGENCY - Licensing Process for Nuclear Installations, Specific Safety Guide No SSG-12, IAEA, Vienna (2010)
37. INTERNATIONAL ATOMIC ENERGY AGENCY - Geological Disposal Facilities for Radioactive Waste Specific Safety Guide No SSG-14, IAEA, Vienna (2011)
38. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Spent Nuclear Fuel, Safety Guide No SSG-15 (Rev. 1), IAEA, Vienna (2020)
39. INTERNATIONAL ATOMIC ENERGY AGENCY - Periodic Safety Review for Nuclear Power Plants, Safety Guide No SSG-25, IAEA, Vienna (2013)
40. INTERNATIONAL ATOMIC ENERGY AGENCY - Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material Specific Safety Guide (2018 Edition) No SSG-26 (Rev.1), IAEA, Vienna (2022)
41. INTERNATIONAL ATOMIC ENERGY AGENCY - Commissioning for Nuclear Power Plants, Safety Guide No SSG-28, IAEA, Vienna (2014)

42. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors, Safety Guide No SSG-40, IAEA, Vienna (2016)
43. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, Safety Guide No SSG-41, IAEA, Vienna (2016)
44. INTERNATIONAL ATOMIC ENERGY AGENCY - Management of Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education, Safety Guide No SSG-45, IAEA, Vienna (2019)
45. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection and Safety in Medical Uses of Ionizing Radiation, Safety Guide No SSG-46, IAEA, Vienna (2018)
46. INTERNATIONAL ATOMIC ENERGY AGENCY - Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, Safety Guide No SSG-47, IAEA, Vienna (2018)
47. INTERNATIONAL ATOMIC ENERGY AGENCY – Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants, Safety Guide No SSG-48, IAEA, Vienna (2018)
48. INTERNATIONAL ATOMIC ENERGY AGENCY –Decommissioning of Medical, Industrial and Research Facilities, Safety Guide No SSG-49, IAEA, Vienna (2019)
49. INTERNATIONAL ATOMIC ENERGY AGENCY – Operating Experience Feedback for Nuclear Installations, Safety Guide No SSG-50, IAEA, Vienna (2018)
50. INTERNATIONAL ATOMIC ENERGY AGENCY - Accident Management Programmes for Nuclear Power Plants, Safety Guide No SSG-54, IAEA, Vienna (2019)
51. INTERNATIONAL ATOMIC ENERGY AGENCY - Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material, Safety Guide No SSG-65, IAEA, Vienna (2022)
52. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection Programmes for the Transport of Radioactive Material, Safety Guide No TS-G-1.3, IAEA, Vienna, (2007)
53. INTERNATIONAL ATOMIC ENERGY AGENCY - The Management System for the Safe Transport of Radioactive Material Safety Guide No TS-G-1.4, IAEA, Vienna (2008)
54. INTERNATIONAL ATOMIC ENERGY AGENCY - Compliance Assurance for the Safe Transport of Radioactive Material, Safety Guide No TS-G-1.5, IAEA, Vienna (2009)
55. INTERNATIONAL ATOMIC ENERGY AGENCY - Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition), Specific Safety Guide No SSG-33 (Rev.1) IAEA, Vienna (2021)
56. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Radioactive Waste, Safety Guide No WS-G-6.1, IAEA, Vienna (2006)
57. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety Assessment for the Decommissioning of Facilities Using Radioactive Material, Safety Guide NoWS-G-5.2, IAEA, Vienna (2009)
58. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Radioactive Waste, Safety Guide No WS-G-6.1, IAEA, Vienna (2006)