



# Strategic Management Committee meeting

## Paper

**Title:** Report from s 47F - privacy on s 33 - security for naval nuclear propulsion  
**Date:** 24 October 2022  
**Item no:** Enter item no

### Purpose:

For information and approval.

### Issue

s 47F - privacy has presented s 47F - privacy report on regulatory structures in s 33 - security and how that could be used in Australia for naval nuclear propulsion. There are 21 recommendations in the paper, and the EG should request the nuclear-powered submarine advisors to perform analysis on whether the recommendations should be accepted. If the EG agrees to accept recommendations, an implementation plan can be developed.

### Background

Following the announcement in September 2021 that Australia was going to pursue a nuclear-powered submarine capability, the then CEO of ARPANSA reached out to s 47F - privacy to determine whether s 47F - privacy could provide assistance to ARPANSA in reviewing Australia's regulatory framework to better prepare the agency for naval nuclear propulsion.

s 33 - security, s 47F - privacy

s 47F - privacy travelled to Australia in August – September 2022 to provide ARPANSA staff with a series of presentations outlining the history, s 33 - security for naval nuclear propulsion. s 47F - privacy also shared s 47F - privacy experiences directly with ARPANSA's executive group and staff.

s 47F - privacy worked with s 47F - privacy to produce a report that provides a series of recommendations to ARPANSA on how to structure the agency to prepare for the introduction of nuclear-powered submarines s 33 - security

### Comment

There are 21 recommendations in the report for ARPANSA to consider to align its regulatory framework and practices to s 33 - security. The report assumes that there will be an Australian regulator s 33 - security. The report also assumes there will be s 33 - security with ARPANSA.

OFFICIAL: Sensitive

s 33 - security

Several recommendations recommend significant s 33 - security. Although implementing these recommendations will probably be necessary, they would not be for ARPANSA s 33 - security. They will depend on the outcome of the s 33 - security and recommended pathway for acquisition.

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### Sensitivity

The report is not classified. However, issues and recommendations from the report are subject to discussions with the s 33 - security

### Legislation

There is no direct legislative change required as a result of discussing this item. However, the report does include recommendations to alter s 33 - security

### Financial implications

There are no direct financial implications with discussing the paper. However, there are multiple recommendations that, if implemented, would create significant need for resources. Conversations for resources for the agency is already occurring in the context of preparation for nuclear-powered submarines. These conversations are occurring internally and with external stakeholders, such as the s 33 - security

### Risk analysis

Several of the recommendations involve substantive risk if adopted too quickly or without proper preparation. Some others can be progressed as part of general preparations. s 33 - security

### Timing/handling:

s 33 - security A public announcement is due by government in March 2023.

ARPANSA can use the time between October 2022 and March 2023 to internally discuss and then choose what recommendations to accept, share with appropriate stakeholders, and then implement as required and needed.

## Communication

### Consultation

No consultation outside of ARPANSA has occurred. s 47F - privacy worked with s 47F - privacy and s 47F - privacy and s 47F - privacy have reviewed the report.

### Communication activities

There are no community awareness opportunities relating to this item.

### Recommendations

That the EG/SMC NOTE the contents of this paper.

AND

That the EG/SMC APPROVE:

Recommendation no.	Recommendation	Chair comments
R1:	That the EG request the nuclear-powered submarine advisors to undertake analysis on what recommendations can be accepted	

## Contact

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Position: Principal Advisor, NPS	Position: Chief of Staff
Branch/office: OCEO	



Australian Government  
Australian Radiation Protection  
and Nuclear Safety Agency



# Regulation of an Australian Naval Nuclear Propulsion Programme

Discussion paper on Australia adopting a  
Nuclear & Radiation Safety Regulatory  
Framework **s 33 - security**

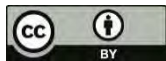
**s 47F - privacy** – ARPANSA Consultant  
October 2022

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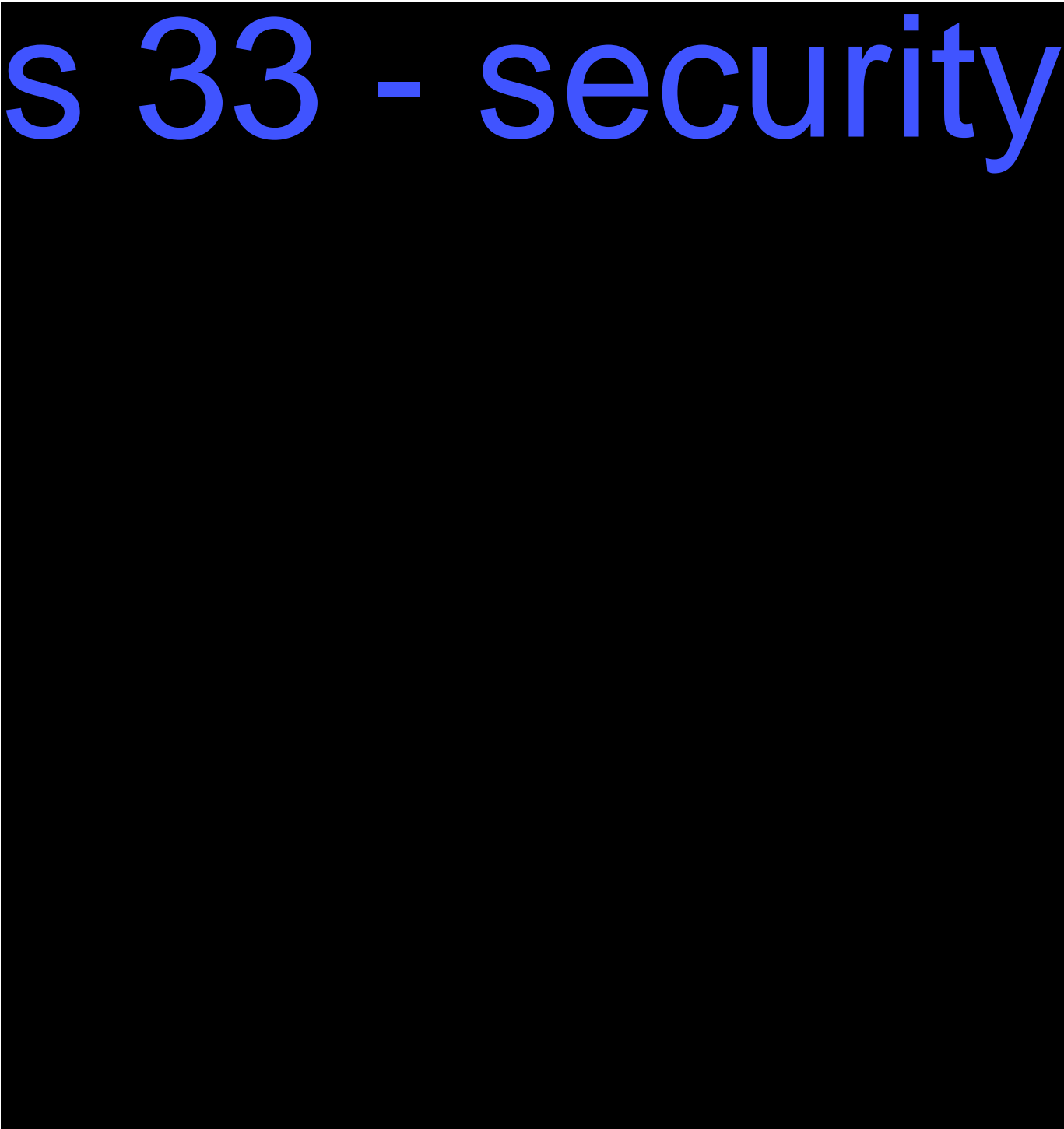
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## Executive Summary

This paper describes the current regulatory framework [s 33 - security](#)

[REDACTED]

The Australian nuclear and radiation safety regulatory framework comprises the the Australian Radiation Protection and Nuclear Safety Act (ARPANS Act) and its associated Regulations.. The framework is mature and its implementation in Australia by ARPANSA is positively recognized by Government and Key Stakeholders including the Public. [s 33 - security](#)

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In summary, this review and analyses has generated 21 recommendations for future consideration that are focused on creating an effective, independent, transparent, fully resourced and accountable regulatory infrastructure

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## 1. Introduction

The purpose of this report is to present the results the GAP and SWOT Analyses for Australia adopting a Nuclear & Radiation Safety Regulatory Framework [s 33 - security](#)

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## 2. GAP Analyses and Recommendations

### 2.1 ARPANSA Organisational Structure and Resources

The Australian Radiation Protection and Nuclear Safety Act 1998 (ARPANS Act) and the Australian Radiation Protection and Nuclear Safety Regulations 1999 (ARPANS Regulations) reflect the Commonwealth's policy for radiation protection and nuclear safety. ARPANSA was established in 1999 through the ARPANS Act to regulate the safety of Commonwealth entities that use or produce radiation. These entities are almost entirely Government departments, agencies and Government-owned businesses. The ARPANS Act also provides the CEO of ARPANSA with other functions, such as undertaking research or providing services. The powers and functions conferred by the ARPANS Act reflect the Government's policy for radiation protection and nuclear safety

ARPANSA has six business groups that carry out activities that support the CEO's regulatory functions under the ARPANS Act and ARPANSA Regulations. ARPANSA's business groups deliver components of the agency's strategies and services and enable it to discharge its responsibilities and perform its functions effectively in a manner commensurate with the radiation risks associated with facilities and activities, as outlined below. The regulatory services branch is currently tasked with regulation of the safety and security of Commonwealth radiation sources and facilities.

ARPANSA consists of approximately 130 staff overall, with offices in Melbourne and Sydney. The Regulatory Services Branch, with approximately 20 inspectorate staff, is based in Sydney, the remainder of ARPANSA is located at a facility in Yallambie, Melbourne.

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## 2.3 ARPANSA Advisory Bodies

The ARPANS Act establishes three independent advisory committees (the Nuclear Safety Committee, the Radiation Health Committee and the Radiation Health and Safety Advisory Committee) to support the CEO with advice. ARPANSA publishes the roles and expectations for advisory bodies, which provide an overview of the purpose and function of the advisory bodies and outlines procedural arrangements. This covers conduct, conflicts of interest, meeting procedures and support. Each advisory body includes a member representing the interests of the general public, who facilitates the interaction between the advisory bodies

and the public. The member reports on any specific contacts made by members of the public relevant to the functions of the advisory body.

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Recommendation 6—s 33 - security

## 2.4 Other Government Bodies of Interest

There are other Commonwealth agencies have functions relating to safety or regulation, including:

- [Australian Safeguards and Non-proliferation Office](#) (ASNO), which combines the Australian Safeguards Office (ASO), the Chemical Weapons Convention Office (CWCO), and the Australian Comprehensive Test Ban Office (ACTBO) that are established under different pieces of Commonwealth legislation. The Director-General of ASNO reports to the Minister of Foreign Affairs. ASNO has four main areas of responsibility in the nuclear area: the application of safeguards in Australia; the physical protection and security of nuclear items in Australia; the operation of Australia's bilateral safeguards agreements; and contribution to the operation and development of IAEA safeguards and the strengthening of the international nuclear non-proliferation regime. ARPANSA has a memo of understanding with ASNO.
- The [Australian Nuclear Science and Technology Organisation](#) (ANSTO), is a corporate Commonwealth government entity and an ARPANSA licence holder. ANSTO operates the OPAL research reactor and a number of other facilities including the Australian Synchrotron and the ANSTO Nuclear Medicine facility. ANSTO conduct research and development in relation to nuclear science and technology as well as produce and use radioisotopes for medicine, science, industry, commerce and agriculture. ANSTO reports to [Department of Industry, Innovation and Science \(DIIS\)](#).
- [Department of Environment and Energy](#) administers the *Environment Protection and Biodiversity Conservation Act 1999* ([EPBC Act](#)), which includes review and approval of environmental assessments for any proposed [Nuclear Action](#). ARPANSA has a memo of understanding with Department of Environment and Energy

- [The Australian Radioactive Waste Agency \(ARWA\)](#) manages Australia's radioactive waste in line with domestic and international regulations, will deliver and operate the Australian National Radioactive Waste Management Facility and subsequent ILW disposal facility and facilitates communication between government, industry, stakeholders and local communities. ARWA sits under the Department of Industry, Science and Resources.

[Australian Maritime Safety Authority \(AMSA\)](#) are Australia's national agency responsible for the maritime safety, protection of the marine environment, and maritime aviation search and rescue. AMSA falls under the Department of Infrastructure and Transport

[Comcare](#) is a statutory authority which administers the Commonwealth's workers compensation scheme. It also acts as the national WHS regulator

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Recommendation 7—s 33 - security

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## 2.5 Site Licensing

### 2.5.1 ARPANSA Licencing

Facilities are defined in the ARPANS Act and regulation. A facility licence may also authorise dealings with sources. Facility licenses include higher risk uses such as the research reactor, irradiation facilitates, large accelerators and legacy sites. The regulatory practice in Australia is not to licence a site but to licence individual facilities or activities on a site. [s 33 - security](#)



[s 33 - security](#)



For a facility licence application, the regulations require the CEO to publish a notice in a daily newspaper and in the Gazette calling for public submissions on the application. There may be security issues and other sensitivities in respect

**Recommendation 8** [s 33 - security](#)




**Recommendation 9-** [s 33 - security](#)



**Recommendation 10-** [s 33 - security](#)



**Recommendation 11 –** [s 33 - security](#)



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### 2.5.2 s 33 - security

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

#### Recommendation 13-s 33

[REDACTED]

### 2.5.3 Modifications to Licences

Changes made by the licence holder to a facility or source license must be notified to the Regulator within three months. If the changes are significant, and would affect safety, the licence holder must obtain prior approval from obtained from ARPANSA, before making the change. The guide [When to seek approval to make changes under Section 63](#) provides guidance on the subject. These changes require a similar level of evidence to be submitted as a new application, however only information relevant to the change is required.

#### s 33

[REDACTED]

## 2.6 Periodic Safety and Security Review Requirements

In accordance with a graded approach, detailed periodic reviews by the licence holder which assessed by the regulator, are required for the highest risk sources such as the research reactor and ANSTO Health. This

is as per the Regulatory Guide Periodic Safety and Security Review of Facilities and is typically mandated every ten years. The ARPANSA guide is based on IAEA SSR Periodic Safety Review for Research Reactors SRS 90.

s 33 - security

Recommendation 14—s 33 - security

## 2.7 Inspection

Areas of inspection are detailed in the Performance Objectives and Criteria (PO&C)<sup>7</sup>. These are detailed in Regulatory Services Inspection Manual<sup>8</sup>. Prior to inspection facility or site-specific questions are developed to investigate compliance with the PO&C. While most inspections cover all modules, some inspections will focus only on specific modules. Each module is broken down into smaller sub-modules to focus on specific areas. Source licences utilise the same approach as facilities using a condensed PO&C format.

Inspection reports are prepared and, following review and approval, placed on the ARPANSA website unless there is a security or commercial reason not to. The report provides information on the outcomes, including improvements or potential non-compliances, identified during inspections to help licence holders review the issues and identify potential strategies to address their causes.

s 33 - security

Recommendation 15 – Consider developing the inspection process to align with the s 33 - security

## 2.8 Enforcement

ARPANSA's [Compliance and Enforcement Manual](#) is the policy that describes the promotion and monitoring of compliance and a graded response to non-compliance. The considerations on which enforcement tool should be used include the safety consequences, nature of the discovery, impact, the licence holder level of intent, their compliance history and other factors.

<sup>7</sup> See <https://www.arpansa.gov.au/regulation-and-licensing/licensing/information-for-licence-holders/inspections/performance-objectives-and-criteria>

<sup>8</sup> See [arpansa-gde-1119web inspection manual.pdf](#)

s 33 - security

Recommendations 16—s 33 - security

## 2.9 Emergency Preparedness and Response

The Regulations require the licence holder to have an emergency plan in the application for the facility and it is subject to ARPANSA's thorough review during the licensing phase. A graded approach is applied to licences of low risk (low or no off-site consequences), where the level of scrutiny is commensurate to risk. The primary publication for implementing emergency preparedness and response in Australia is the Radiation Protection Series G-3 Guide for Radiation Protection in Emergency Exposure Situations<sup>9</sup>

For visits to Australian ports by nuclear powered warships (NPW)<sup>10</sup>, an inter-departmental committee, the Visiting Ships Panel (Nuclear) (VSP(N)) oversees the arrangements. VSP(N) involves a number of agencies at the State/Territory and Commonwealth level including ARPANSA, ANSTO and the Australian Defence Forces (ADF). Specific roles and responsibilities relating to visits from Nuclear Powered Warships, including monitoring, are detailed in the Naval Operations Manual *OPSMAN1*, and the port specific safety plans, which vary according to the jurisdiction responsible for the port. s 33 - security

The capabilities and roles of these teams are consistent with the requirements of the IAEA Response Assistance Network (RANET) capabilities. ARPANSA also maintains laboratory-based facilities for the detailed analysis of environmental samples and for the measurement of radioactivity in contaminated people.

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<sup>9</sup> See <https://www.arpansa.gov.au/regulation-and-licensing/regulatory-publications/radiation-protection-series/guides-and-recommendations/rpsg-3>

<sup>10</sup> See <https://www.arpansa.gov.au/research/radiation-emergency-preparedness-and-response/visits-by-nuclear-powered-warships>

s 33 - security

**Recommendation 17**– Consider requirements and resources required for s 33 - security emergency response across several Australian states.

## 2.10 Nuclear Security

ARPANSA is the competent authority to ensure the safety and control of radioactive material for the Commonwealth, while jurisdictional regulatory bodies are responsible for their jurisdictions across Australia. The Australian Safeguards and Non-proliferation Office (ASNO) is the competent authority to ensure the secure accounting and control of nuclear material for all jurisdictions. These authorities have separated functions though separate Acts. For ARPANSA, there is an information sharing arrangement in place under a memorandum of understanding (MoU) with ASNO, while information is shared with the States through the Radiation Health Committee (RHC).

While the [ARPANS](#) Act does not explicitly require interfaces between safety and security to be considered, the [ARPANSA website](#) lists international best practice documentation on their website including NSS-13, NSS-14, NSS-15 and IAEA-TECDOC-1801 *Management of the Interface between Nuclear Safety and Security for Research Reactors*. All of these documents refer to interfaces between safety and security, are promoted as best practice, and may be considered during application and review.

s 33 - security

Given the importance of the safety and security interface and the concept of security informed nuclear safety it is imperative that whatever regulatory construct is adopted in Australia the regulatory organisations work together efficiently and effectively.

**Recommendation 18**– s 33 - security

## 2.11 Environmental (airborne/water)

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Requirements for regulation of public exposure have been established in the Code for Radiation Protection in Planned Exposure Situations (2016) (RPS C-1). Complying with this code is a condition of licence for all licences issued under the ARPANS Act.

Dose limits for public exposure are established in the ARPANSA regulation and in RPS C-1 (Schedule B). These include 1 mSv in a year for effective dose, with an annual equivalent dose to the less of these of 15 mSv and 50 mSv for skin.

Where an application is received which intends to establish discharge limits above the exempt values, these are assessed by ARPANSA on a case-by-case basis. This can be in the form of a licence allowing discharge, or the granting of a specific exemption.

ARPANSA has granted an airborne discharge authorisation to ANSTO based upon an assessed dose to a hypothetical critical group of individuals. The objective for radiation dose to a member of the public due to airborne radioactive discharges from all conducts and dealings is 20 mSv per year. To assist in keeping these doses as low as reasonably achievable the doses are monitored through discharge notification levels and reported to ARPANSA. The quarterly notification level is set at 50 per cent of the annual level, and a four weekly notification level is set at 20 per cent of the annual level.

The discharge of liquid wastes is managed through individual trade waste agreements with the local authority for waterways and sewers. The waste discharged must comply with drinking water standards. The drinking water reference activity concentrations correspond to an annual constraint of 0.1 mSv/year and are based on the methodology specified in the World Health Organisation's (WHO) Guidelines for Drinking Water Quality (2004) and using the conversion factors specified in the International Atomic Energy Agency International Basic Safety Standards for Protection against Ionising Radiation and for the Safety of Radiation Sources Safety Series No. 115 (1996). It is likely that discharges to sea from a docked submarine would be regulated by the Department of Environment Agriculture, Water Authority.

Under the Code for Radiation Protection in Planned Exposure Situations, RPS C-1 the Responsible Person must ensure that: a monitoring program, sufficient to verify and demonstrate compliance with the authorisation, is implemented to confirm that public exposure due to any radiation source within the practice is adequately assessed

s 33 - security

[REDACTED]

## 2.11 Radioactive Waste Management

ARPANSA is the competent regulatory authority for radioactive waste arising at Commonwealth facilities in Australia. The licensing process and associated regulations require the licensee to develop arrangements for the management, storage and ultimately the disposal of radioactive waste arisings.

The current waste streams include ILSW and LLSW for which ARPANSA has an established and mature regulatory framework albeit with some gaps in respect of disposal. s 33 - security

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[Redacted]

[Redacted]

**Recommendation 19**– Review current radioactive waste regulations and guidance **s 33 - security**

[Redacted]

## 2.12 Decommissioning

Decommissioning is licenced under the ARPANS Act and Regulations and for Commonwealth facilities and activities ARPANSA is the competent regulatory authority. ARPANSA’s main guide for decommissioning is based on IAEA Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, Specific Safety Guide SSG-47 (2018). ARPANSA requires licence holders to submit and develop decommissioning plans as part of their arrangements.

**s 33 - security**

[Redacted]

**s 33 - security**

[Redacted]

**Recommendations 20**– Review current decommissioning regulations and guidance **s 33**

[Redacted]

## 2.13 Transport

ARPANSA applies the *Code for the Safe Transport of Radioactive Material*, RPS C-2<sup>11</sup> which is based on the *International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material 2018*

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<sup>11</sup> See [Radiation Protection Series C-2 \(Rev. 1\) | ARPANSA](#)

*Edition (SSR-6, Rev. 1)*<sup>12</sup> and is the designated competent authority for the movement of radioactive packages by road, inland waterways and rail for Commonwealth entities.

The **s 33 - security** civil nuclear industry radioactive package transport by road, inland water and rail and also bases its regulation on IAEA SSR-6. **s 33 - security**

**s 33 - security**

**Recommendation 21** - Review the existing ARPANSA transport guidance against the relevant **s 33 - security** for completeness.

## 2.14 Occupational Exposure to Ionising Radiation

ARPANSA sets the requirements in Australia for the protection of occupationally exposed persons, the public and the environment in planned exposure situations via the ARPANS Act and associated Regulations and through the *Code for Radiation Protection in Planned Exposure Situations* (2020), RPS C-1 (Rev.1)<sup>13</sup>.

See recommendation 9 above.

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<sup>12</sup> See [Regulations for the Safe Transport of Radioactive Material | IAEA](#)

<sup>13</sup> See [Radiation Protection Series C-1 \(Rev. 1\) | ARPANSA](#)



### 3. Strengths and Weaknesses Opportunities Threats (SWOT) Analysis

# s 33 - security

## 4. Conclusion

The review and analysis has produced 21 recommendations for future consideration. These are based around the existing ARPANS Act and Regulations, the current regulatory framework and resourcing.

[illegible]

14	s 33 - security
15	Consider developing the inspection process to align with the s 33
16	s 33 - security
17	Consider requirements and resources required for s 33 - security emergency response across several Australian states.
18	s 33
19	Review current radioactive waste regulations and guidance s 33
20	Review current decommissioning regulations and guidance s 33
21	Review the existing ARPANSA transport guidance against the relevant s 33 for completeness.

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Appendix 2: s 33 - security Radioactive Waste Management & Disposal  
Policy and Submarine Dismantling Programme

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