Australian Government
Australian Submarine Agency

ASA

Decommissioning

Controlled Industrial Facility (HMAS *Stirling*)
ARPANSA Construction Licence
Technical Overview

www.asa.gov.au

Contents

List of Acronyms

ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASA	Australian Submarine Agency
AUKUS	The trilateral security partnership between Australia, United Kingdom and the United States of America
CIF	Controlled Industrial Facility
HMAS	His Majesty's Australian Ship
IAEA	International Atomic Energy Agency
SRF-West	Submarine Rotational Force – West

Decommissioning

Section 1 – Introduction

1.1 This Technical Overview provides general information on the processes and procedures to safely decommission the Controlled Industrial Facility (CIF) at HMAS *Stirling* at the end of its useful life.

1.2 This Technical Overview addresses the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) requirements detailed in ARPANSA Form 1797 - Licence Application Form Prescribed Radiation Facility V11 dated July 2021.

1.3 This Technical Overview contains information submitted to ARPANSA developed using the *Regulatory Guide: Plans and Arrangements for Managing Safety* (GDE 1735).

1.4 This Technical Overview provides insight and explanation of the aim, scope, strategy and management of the decommissioning of the CIF at HMAS *Stirling*.

1.5 This Technical Overview is not a standalone document and should be read in conjunction with the other Australian Submarine Agency (ASA) technical overview documents.

Section 2 – Aim of Decommissioning and Site Rehabilitation

Aim - Protection of People and the Environment

2.1 The successful decommissioning of the CIF at HMAS *Stirling* will ensure ongoing protection of people and the environment.

2.2 The objective for the licence holder is to leave the CIF and site in such a state that potential radiation exposure levels to people and the environment posed by the site will not exceed acceptable levels.

Future Options

2.3 At this point in time the final use of the CIF is unknown. Options may include:

a. Continued operations as a radiologically controlled building. In this event, continued application of Defence radiation controls would apply

b. Repurposing of the CIF for non-radiological operations. This would include removal of all waste materials and any persistent radioactive residues. Any non-radiological use of the CIF would be permitted only after the CIF is cleared radiologically, to ensure exposure levels are within regulatory limits

c. Complete removal of the CIF. Following decommissioning to remove any/all waste materials and any/all radioactive residues, the CIF may be demolished and removed to permit the associated Defence land to be used for other purposes. Any non-radiological use of the CIF would be permitted only after the CIF is cleared radiologically to ensure exposure levels are within regulatory limits.

2.4 All future options will require approval and oversight from relevant regulatory authorities.

Section 3 – Scope and Assumptions

3.1 This Technical Overview is limited to the decommissioning of the CIF at HMAS *Stirling.*

3.2 The following assumptions have been made in the development of this Technical Overview:

a. Only authorised activities that are consistent with the licenses, permits and approvals granted for the CIF at HMAS *Stirling* will be conducted at the CIF

b. The CIF is for waste management and temporary storage only and not for permanent storage of waste. This Technical Overview should be read in conjunction with the technical overview for *Radioactive Waste Management.*

c. During the operational life of the CIF, the ASA will operate and maintain a dedicated system that tracks all radiological materials, their movements and all activities involving them at the facility. This system will interface with applicable Defence systems.

d. This Technical Overview has been developed based on current legislation, policies, practices and international best practice advice as published by the International Atomic Energy Agency (IAEA). It is assumed that updated legislation, policies, practices and international best practice guidance will be available at the time of decommissioning.

Section 4 – Facility Description

Site Location and Description

4.1 The CIF is located on Garden Island, Western Australia at the HMAS *Stirling* Naval Base.

Baseline Survey and Design Elements

Baseline survey

4.2 A baseline radiological survey for HMAS *Stirling* outlined in the technical overview for the *Safety Analysis Report* is to be conducted in accordance with ARPANSA *Regulatory Guide - Preparation of the safety analysis report for non-reactor facilities* (ARPANSA-GDE-1925). Regular environmental surveys will also be undertaken during operations.

Design elements included to facilitate decommissioning

4.3 Features that reduce or eliminate unplanned gaseous or liquid discharges to the environment have been included in the design of the CIF. As outlined in the technical overview for the *Safety Analysis Report,* additional features have been planned that will also aid decommissioning.

Section 5 – Decommissioning Strategy

5.1 A detailed decommissioning strategy will be developed over the life of the facility and consideration will be given to the matters addressed in:

a. ARPANSA, *Regulatory Guide – Decommissioning of Controlled Facilities* (ARPANSA-GDE-1731)

b. IAEA, *Decommissioning of Facilities*, General Safety Requirements Part 6

c. IAEA, *Decommissioning Strategies for Facilities Using Radioactive Material*

d. IAEA, *Selection of Decommissioning Strategies: Issues and Factors*.

5.2 A specific safety assessment will be conducted to justify the selection of an appropriate decommissioning strategy. The decommissioning strategy will be informed by preserved technical information on the design, construction and operation of the CIF.

5.3 Future Defence and ASA decision makers will be required to address matters such as immediate or delayed decommissioning, or availability of disposal options where decontamination of some items is not immediately feasible.

Section 6 – Decommissioning Management

Management System for Decommissioning

6.1 Defence will establish a Management System for Decommissioning that specifies the organisation structure, its policy, and the responsibilities and functions of the organisation's management.

6.2 The management system will include:

a. Clear organisational structure and responsibilities

b. Competency and training requirements

c. The requirement for approved standards, procedures and guidance to cover the organisation's tasks

d. Instructions to cover specific tasks and activities

e. The requirement for quality assurance audits of ASA processes to demonstrate their adequacy and compliance.

6.3 The management system for decommissioning will be similar to the control arrangements used for the operation of the facility and will take into account the advice provided in IAEA's *Application of the Management System for Facilities and Activities*.

Key Stakeholders

6.4 At this point in time, key stakeholders for decommissioning of the CIF include:

a. Australian Naval Nuclear Power Safety Regulator (ANNPSR)

b. Australian Radioactive Waste Management Authority (ARWA)

c. Australian Safeguards and Non-Proliferation Office (ASNO)

d. Department of Climate Change, Energy, Environment and Water (DCCEEW)

e. The Department of Defence:

- Offices of the Chief of Defence Force (CDF) and the Secretary
- Royal Australian Navy (RAN)
- Security and Estate Group (SEG)
- Naval Shipbuilding and Sustainment Group (NSSG)

6.5 Any other relevant stakeholders identified during operation of the CIF will be incorporated, including the public.

Safety Management

6.6 Safety Management for decommissioning will follow the licensee safety management system and Defence's safety management systems and policies as applicable.

6.7 A Safety Management Committee will form a subset of the Decommissioning Management Committee. The Safety Management Committee will be the primary entity responsible for the management of all critical safety activities during decommissioning, and will guide and review decommissioning hazard identification analysis and the development of mitigation strategies and risk controls.

Organisational and administrative controls

6.8 The organisational structure for decommissioning will be similar to the effective control arrangements outlined in the technical overview for *Effective Control Arrangements*.

Staffing, Qualifications and Training

6.9 A Systems Approach-based competency needs analysis has not yet been conducted to identify decommissioning workforce requirements.

6.10 Defence will establish specific training prerequisites to close any skills or knowledge gaps identified by the competency needs analysis. This process will be managed by the Integrated Project Management Team and delivered by the Project Management Office alongside other organisations where relevant.

Project Management

6.11 Decommissioning of the CIF will adhere to standard Defence project management processes including a:

a. Refined decommissioning plan, including public consultation activities

b. Breakdown of the tasks, activities and deliverables required

c. Schedule of tasks and activities to meet the deliverables

d. Risk management matrix and risk control plan

e. Decommissioning budget.

Cost Estimate

6.12 Defence will undertake a cost analysis which will account for:

a. Workforce

b. Project management

c. Waste management and categorisation

d. Decontamination and demolition

e. Site remediation.

Quality Management

6.13 The ASA is in the process of establishing a quality management system. It is anticipated that the system will be ISO 9001 compliant.

Documentation and Recordkeeping

6.14 The ASA adheres to the requirements of the *Archives Act 1983*. ASA's current records management tool meets the requirements of the Archives Act 1983.

6.15 A final CIF commissioning report will be produced by Defence to document the as-built status of the CIF. The ASA will use this commissioning report to aid future modifications and decommissioning of the CIF.

6.16 Defence records detailing CIF operations, including the movement of radioactive materials will be maintained. The technical overview for *Radioactive Waste Management* further outlines records handling.

6.17 The radiological source inventory system has not yet been selected for the ASA. The selected system will meet the requirements of the *Archive Act 1983*, Defence policy, and relevant regulators. The inventory system will be selected and verified prior to CIF operations.

Contractor involvement

6.18 It is anticipated that the ASA will use specialist contractors for some of the tasks associated with decommissioning. Standard government contracting methodology that adheres to the requirements of the *Public Governance, Performance & Accountability Act 2013* will be used. Contractors will be required to adhere to ASA and Defence safety and security requirements.

Section 7 – Conduct of Decommissioning

Decommissioning subject to legislative control

7.1 Decommissioning of the CIF will be a regulated activity. The principles and approach of ARPANSA's *Fundamentals for Protection Against Ionising Radiation* (Radiation Protection Series F-1) and the requirements of ARPANSA's *Planned Exposure Code* (Radiation Protection Series C-1) and/or equivalent documents will be enforced by the regulator.

Matters to be taken into account

7.2 Decommissioning of the CIF is not anticipated before 2080, and specific details of decommissioning are not fully developed at this time. Consideration will be given to the following:

a. Contaminated structures, systems and equipment that may be within the CIF

b. Surface and near-surface soil, sediment and water that may be impacted by the CIF

c. Techniques and technologies that may be utilised to decontaminate and dismantle the CIF

d. Criteria for finalising the decommissioning of the CIF

e. Ongoing surveillance and maintenance requirements for the site at HMAS *Stirling*

Conceptual Decommissioning Plan

7.3 A preliminary decommissioning plan describing the sequence of activities that are currently expected to be performed is outlined in the technical overview for the *Safety Analysis Report*.

Graded Approach to Decommissioning Safety

7.4 A graded approach will be applied to all aspects of CIF decommissioning. This will consider the possible radiation risks arising from the conduct of decommissioning. Activities will be evaluated for any identified exposure pathways and control measures will be optimised to ensure the safety of people and the environment.

Section 8 – Waste Management Program

8.1 Radioactive waste management will be undertaken in accordance with ASA radioactive waste management policies. The requirement to actively consider and plan for the management and disposal of radioactive waste generated as a result of planned decommissioning and site remediation activities is outlined in the technical overview for *Radioactive Waste Management*.

Section 9 – Radiation Protection

9.1 The technical overview for *Radiation Protection* outlines radiation protection considerations for the construction phase. A review of the technical overview for *Radiation Protection* used during the operational phase of the CIF will occur when a decision to decommission the CIF is made. This will ensure the technical overview for *Radiation Protection* addresses specific radiation protection requirements unique to decommissioning.

9.2 Protection of workers against exposure will be a principal focus of radiation protection during decommissioning. The aim of successful decommissioning and any required site rehabilitation is the decommissioning of the CIF while providing ongoing protection of people and the environment.

9.3 Radiation protection requirements for offsite transport of waste materials for disposal shall be conducted in accordance with ARPANSA's *Code for the Safe Transport of Radioactive Material* and other relevant standards

Section 10 – Safety Assessment

10.1 The current safety analysis and its associated hazard identification and analyses are outlined in the technical overview for the *Safety Analysis Report*. Updated safety assessment documentation has been developed in conjunction with development of this Technical Overview.

10.2 Updated decommissioning safety assessment documentation will incorporate advice from the IAEA *Safety Assessment for Decommissioning* to support the selection of a decommissioning strategy.

10.3 A key part of the confidence building process in the safety assessment will be the conduct of an independent review of the safety assessment. The independent review will be performed by suitably qualified and experienced persons without direct responsibilities for the decommissioning of the CIF and/or site remediation.

Section 11 – Environmental Impact Assessment

11.1 Appropriate environmental assessments will be conducted in line with relevant regulatory authority requirements once the ASA has determined that the CIF has reached the end of its useful life and is to be decommissioned.

Section 12 – Emergency Planning

12.1 The current emergency plan is outlined in the technical overview for *Emergency Management.* Emergency response arrangements proportionate to the radiological hazards identified during decommissioning planning will be established. Modifications may be made to the CIF-specific emergency plan or a completely new emergency plan may be required. The decommissioning emergency plan will be established and maintained with notifiable events reported to the regulator.

Section 13 – Protective Security and Safeguards

13.1 Protective security arrangements implemented during the operation of the CIF will also be implemented during decommissioning. The relevant CIF security plans and HMAS *Stirling* Physical Security Plan will be in force throughout decommissioning.

13.2 No nuclear material will be accepted by the facility. A range of technical and administrative measures may also be implemented to uphold Australia's non-proliferation obligations.

Section 14 – Final Radiological Survey

14.1 A radiological survey will be undertaken to finalise the decommissioning process. This survey will seek to as far as practicable mirror the methodology, locations and assumptions used in the initial radiological baseline survey. Conceptual survey design and specific methodology, instruments and procedures will be determined prior to commencing decommissioning by the Integrated Project Management Team.

14.2 The purpose of this final survey is to demonstrate compliance with a commitment to return the site to its initial state as far as practicable and to demonstrate there is no significant ongoing radiological risk associated with the decommissioned and rehabilitated site. All source information and site survey information will be recorded and maintained within both the ASA and Defence electronic document management systems.

14.3 It is anticipated that the future nuclear safety regulator will impose a suitable period of ongoing environmental monitoring after site closure, and once satisfied with site safety over time, ultimately cease the period of institutional control in accordance with IAEA *Release of Site from Regulatory Control upon Termination of Practices*.