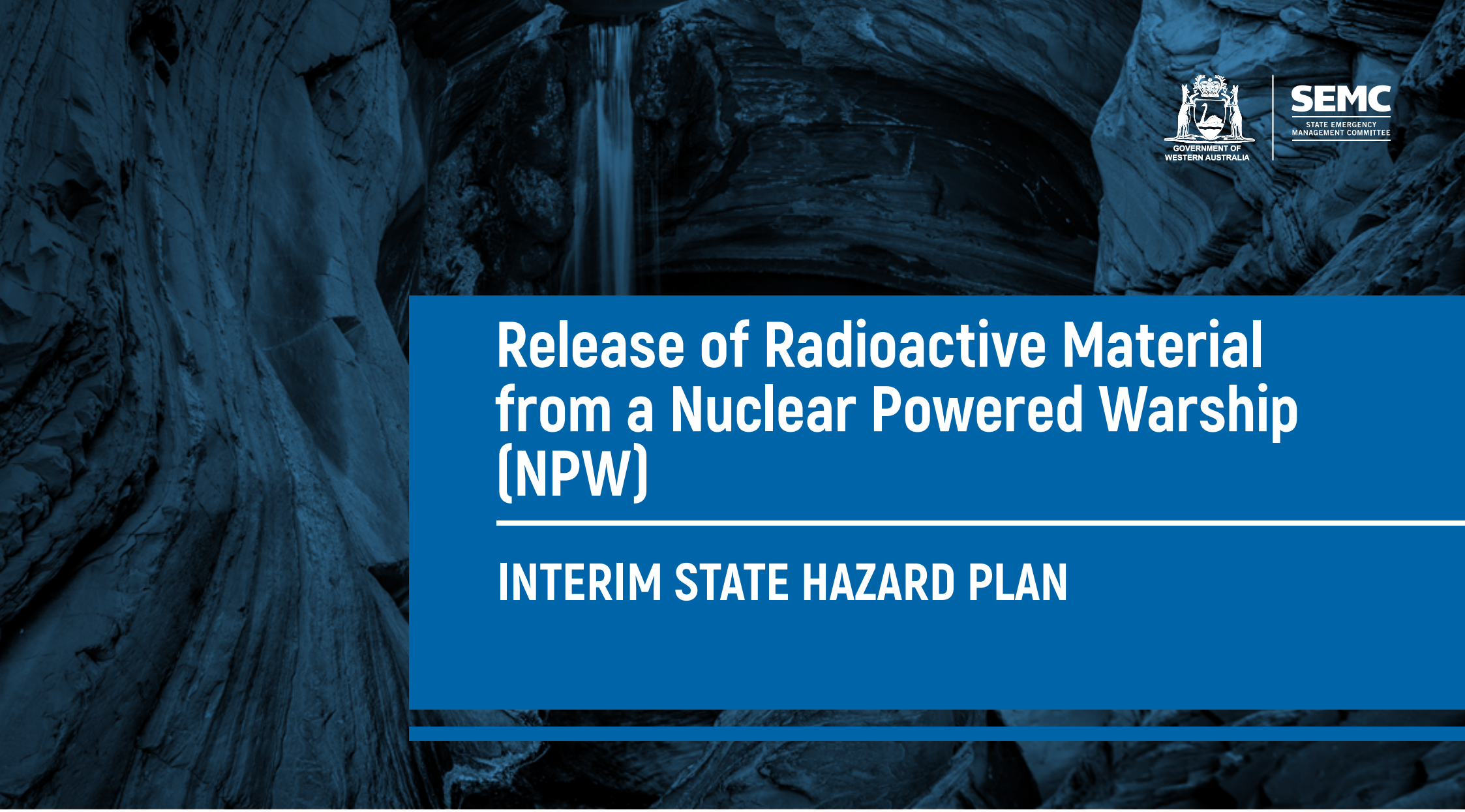

GOVERNMENT OF WESTERN AUSTRALIA

SEMC
STATE EMERGENCY MANAGEMENT COMMITTEE

Release of Radioactive Material from a Nuclear Powered Warship (NPW)

INTERIM STATE HAZARD PLAN

RESPONSIBLE AGENCY	Department of Fire and Emergency Services
APPROVED BY	State Emergency Management Committee
RESOLUTION NUMBER	09/2026
VERSION NUMBER	INTERIM **V1.01**
DATE OF APPROVAL	12 MARCH 2026
DATE OF EFFECT	20 AUGUST 2026
REVIEW DATE	TBC

Contact Details

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(08) 9395 9300

Amendment Table

No.	Date	Details	Amended by
1	March 2026	Interim Plan Version 1.00 - Interim Plan approved by SEMC (resolution number 09/2026) to replace State Hazard Plan HAZMAT Annex A Radiation Escape from a Nuclear Powered Warship (NPW). Minor updates to content to reflect the pending change in Hazard Management Agency from Commissioner of Police to the Fire and Emergency Services Commissioner.	DFES Future Capability
2	August 2026	Interim Plan Version 1.01 - Minor amendments made to reflect control and coordination arrangements between State and Commonwealth agencies as approved by SEMC (resolution number 09/2026).	DFES Future Capability

The SEMC acknowledges the Aboriginal peoples throughout the state of Western Australia as the Traditional Custodians of the lands where we live, work and volunteer. We recognise Aboriginal peoples' continued connection to land, waters and community, and pay our respects to Elders both past and present

This document was designed to be viewed electronically and aims to meet the West Australian Government's accessibility and inclusivity standard, including meeting the World Wide Web Consortium's Web Content Accessibility Guidelines version 2.1 (WCAG 2.1) at level AA. If anything in this document is inaccessible to you, or you are experiencing problems accessing content for any reason, please contact the State Emergency Management Committee Business Unit at semc.policylegislation@dfes.wa.gov.au.

All of the State emergency management legislation and documents can be accessed via the State Emergency Management Framework page of the State Emergency Management Committee website.

Contents

Part One:

Introduction

The State Hazard Plan – Release of Radioactive Material from a Nuclear Powered Warship (NPW) (the Plan), provides an overview of the emergency management arrangements for a release of radioactive material from an NPW in Western Australia (WA), in accordance with criteria laid down by the Commonwealth Government. The Plan contains information on prevention, preparedness, response and initial recovery.

The Fire and Emergency Services (FES) Commissioner is the Hazard Management Agency (HMA) for a release of radioactive material from a nuclear powered warship.

The Department of Fire and Emergency Services (DFES) is responsible for the development, implementation and revision of the Plan, in consultation with key stakeholders.

1.1 Scope

This Plan outlines emergency management arrangements and the agreed roles and responsibilities for an incident involving the release of radioactive material from an NPW visiting Western Australia. The Plan covers naval nuclear reactor accidents, primarily in the Port of Fremantle and Cockburn Sound, and King George's Sound, Albany.

The Plan contains UNCLASSIFIED material. Specific information of a higher classification is contained in the State Operational Plan for a Release of Radioactive Material from a Nuclear-Powered Warship (State Operational Plan), which is restricted to organisations with roles and responsibilities within it.

1.2 Hazard Definition

The Plan relates to the prescribed hazard of a release of radioactive material from an NPW.

NPWs use steam turbine machinery for propulsion, where the energy for steam generation is supplied from the fission of uranium fuel in a nuclear reactor. Extensive precautions are taken in the design, construction and operation of all nuclear reactors to protect against the release of radioactive material to the environment, and to contain any potential release.

The reactor core in NPWs is so designed that it is physically impossible for it to explode. A significant release of fission products from the fuel could only occur in an accident severe enough to cause fuel melting.

In such circumstances, radioactive fission products would be released from the fuel into the reactor compartment but would be primarily contained within structures of the vessel. However, because some of the fission products are volatile or gaseous, a slow leakage to the atmosphere is possible, where they would disperse according to the prevailing weather pattern.

The assumptions, models and parameters used in ARPANSA's 2000 Reference Accident are used to assess the suitability of ports for NPW visits in Australia and for developing port safety plans.

In the event an accident involving melting fuel did occur, the following risks should be considered:

- direct gamma radiation from the vessel
- gamma radiation from a drifting cloud or plume of radioactivity and from material deposited on the ground
- inhalation of airborne fission products, in particular radioactive iodine
- ingestion of fission products from contaminated food or water
- ingestion of fission products indirectly, particularly radioactive iodine in milk from cows grazing on contaminated pastures.

Further details of these risks are set out in Appendix F of the Plan.

1.3 Roles and Responsibilities

The State Government, through the FES Commissioner as HMA, is responsible for ensuring that all actions and services necessary to safeguard the public in the event of a release of radioactive material from a visiting NPW are in place.

Key agencies with responsibilities under this Plan, in addition to DFES include:

- Australian Defence Force, Joint Operations Support Staff (JOSS)
- Australian Federal Police (AFP)
- Australian Naval Nuclear Power Safety Regulator (ANNPSR)
- Australian Nuclear Science and Technology Organisation (ANSTO)
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
- Bureau of Meteorology (BoM)
- Department of Health
- Fremantle Port Authority
- National Emergency Management Agency (NEMA)
- Royal Australian Navy (RAN)
- Royal Australian Air Force
- Southern Ports Authority
- Western Australia Police Force (WA Police Force)

It is recommended that each agency with a role or responsibility under this Plan has appropriate operational procedures detailing their response arrangements in accordance with this Plan. These arrangements should be complementary to the agency's operational procedures, detailing their roles and responsibilities under the State Emergency Management Plan.

Information regarding the roles and responsibilities of relevant agencies under this Plan is detailed in Appendix C.

In addition, the following committees and structures are in place to plan and oversee operations involving NPWs:

- Visiting Ships Panel (Nuclear) (VSP(N))
- Nuclear Powered Warship Visiting Ships Coordinating Committee (NPWVSCC)
- Port Nuclear Safety Panel
- Naval Nuclear Ship Safety Organisation (NNSSO)
- Albany Community Nuclear Powered Warship Visits Committee (ACNPWVC).

Information regarding the roles of these committees is available in Appendix E.

The conditions, procedures and responsibilities for the conduct of visits to Australia by NPWs from allied countries are detailed in the Department of Defence publication Visits to Australian by Nuclear-Powered Warships [OPSMAN 1]. A copy of this publication is held by the Reference Section of the State Library of Western Australia and is available for public information.

1.4 Related Documents and Legislation

This Plan is to be read in conjunction with the State Emergency Management (EM) Framework, including the *Emergency Management Act 2005* (EM Act), *Emergency Management Regulations 2006*, State EM Policy, and relevant Plans, Procedures and Guidelines. In particular, State Hazard Plan – HAZMAT should be read for a comprehensive understanding of these arrangements.

In addition, the Plan should be read in conjunction with the following documents:

- Australian Government Crisis Management Framework (AGCMF), NEMA
- Australian Government Radiological and Nuclear Events Plan (AUSRNEPLAN), ARPANSA
- Australian Clinical Guidelines for Radiological Emergencies, Australian Health Protection Principal Committee (AHPPC) 2012

- Department of Defence publication 'Visits to Australia by Nuclear-Powered Warships' (OPSMAN 1)
- Guide for Radiation Protection in Emergency Exposure Situations, ARPANSA 2019
- Radiation Monitoring Handbook: Nuclear Powered Warships, ANSTO 2024
- State Operational Plan for the Release of Radioactive Material from a Nuclear Powered Warship (State Operational Plan), DFES
- State Potassium Iodide Distribution Plan, Department of Health - Disaster Preparedness and Management Unit
- The 2000 Reference Accident Used to Assess the Suitability of Australian Ports for Visits by Nuclear Powered Warships, ARPANSA 2000
- Visit Operation Orders, prepared by DFES for each visit of an NPW and details specific multi-agency operational and administrative procedures applicable to the visit.

Legislation and codes relevant to this plan include but are not limited to:

- *Australian Naval Nuclear Power Safety Act 2024* (Commonwealth) (ANNPS Act)
- *Australian Naval Nuclear Power Safety Regulations 2025* (Commonwealth)
- *Australian Nuclear Science and Technology Organisation Act 1987* (Commonwealth)
- *Australian Radiation Protection and Nuclear Safety Act 1998* (Commonwealth) (ARPANS Act)
- *Dangerous Goods Safety Act 2004 and Regulations 2007*
- *Environmental Protection Act 1986 and Regulations*
- *Fire and Emergency Services Act 1998*
- *Fire Brigades Act 1942 and Regulations 1943*
- *Port Authorities Act 1999*
- *Public Health Act 2016*
- *Radiation Safety Act 1975*
- *Radiation Safety (General) Regulations 1983*
- *Radiation Safety (Transport of Radioactive Substances) Regulations 2002*
- *Shipping and Pilotage Act 1967*
- *Work Health and Safety Act 2020*
- *Work Health and Safety (General) Regulations 2022.*

1.5 Activities Informing the Assurance Process

Due to the nature of NPW propulsion plants, special procedures for NPWs have been adopted as recommended at a national level to ensure that the safety of the WA community is maintained during any visits by such vessels. Details of the standards required and supporting information are set out in OPSMAN 1. Examples include procedures governing conditions of entry and arrangements for visits, which include pre-visit exercises and post-visit reviews.

The FES Commissioner, as the HMA, engages with other subject matter experts to ensure an ongoing awareness and a contemporary understanding of the hazard and mitigation strategies.

The HMA ensures aspects of operational performance are reviewed and that a consistent and structured approach is applied to all aspects of operational performance that:

- complies with relevant State EM Policy and plans
- ensures that identified lessons and opportunities for improvement are actioned
- ensures that the HMA's service delivery meets community expectations.

In accordance with State EM Policy statement 5.11.3 regarding debriefs, DFES will undertake operational lessons management activities after all incidents. Reviews and analysis should be conducted by all State agencies following an event.

Part Two:

Prevention and Mitigation

2.1 Responsibility for Prevention and Mitigation

It is the responsibility of all NPW Commanding Officers and the vessel's sovereign state to ensure that nuclear safety prevention and mitigation strategies relative to their operations are implemented and maintained at an adequate level.

The conditions, procedures and responsibilities for the conduct of visits to Australia by NPWs from allied countries are detailed in the Department of Defence publication OPSMAN 1. Reference should also be made to Australian Clinical Guidelines for Radiological Emergencies (AHPPC, 2012).

Visits by NPWs will only be permitted to approved berths and anchorages, assessed by the VSP(N) as suitable for use by NPWs. The anchorage locations have been selected so that in the unlikely event of a Reference Accident, it is unlikely that any residences would be impacted or persons would be subject to a radiation hazard requiring countermeasures.

2.2 Prevention and Mitigation Strategies

Prevention and mitigation are considered within the national arrangements of OPSMAN 1. This includes standards for visits, visit planning (including security considerations) and on-site monitoring before, during, and after visits.

Radiation monitoring capability must be established at the relevant port prior to the arrival of the NPW. Radiation monitoring requirements for visits to primary ports and secondary ports are outlined in section 3.4.5 of the Plan.

Safety and security arrangements for the base at HMAS *Stirling* are the responsibility of the RAN and AFP.

2.3 Standard Arrangements for Visiting NPWs

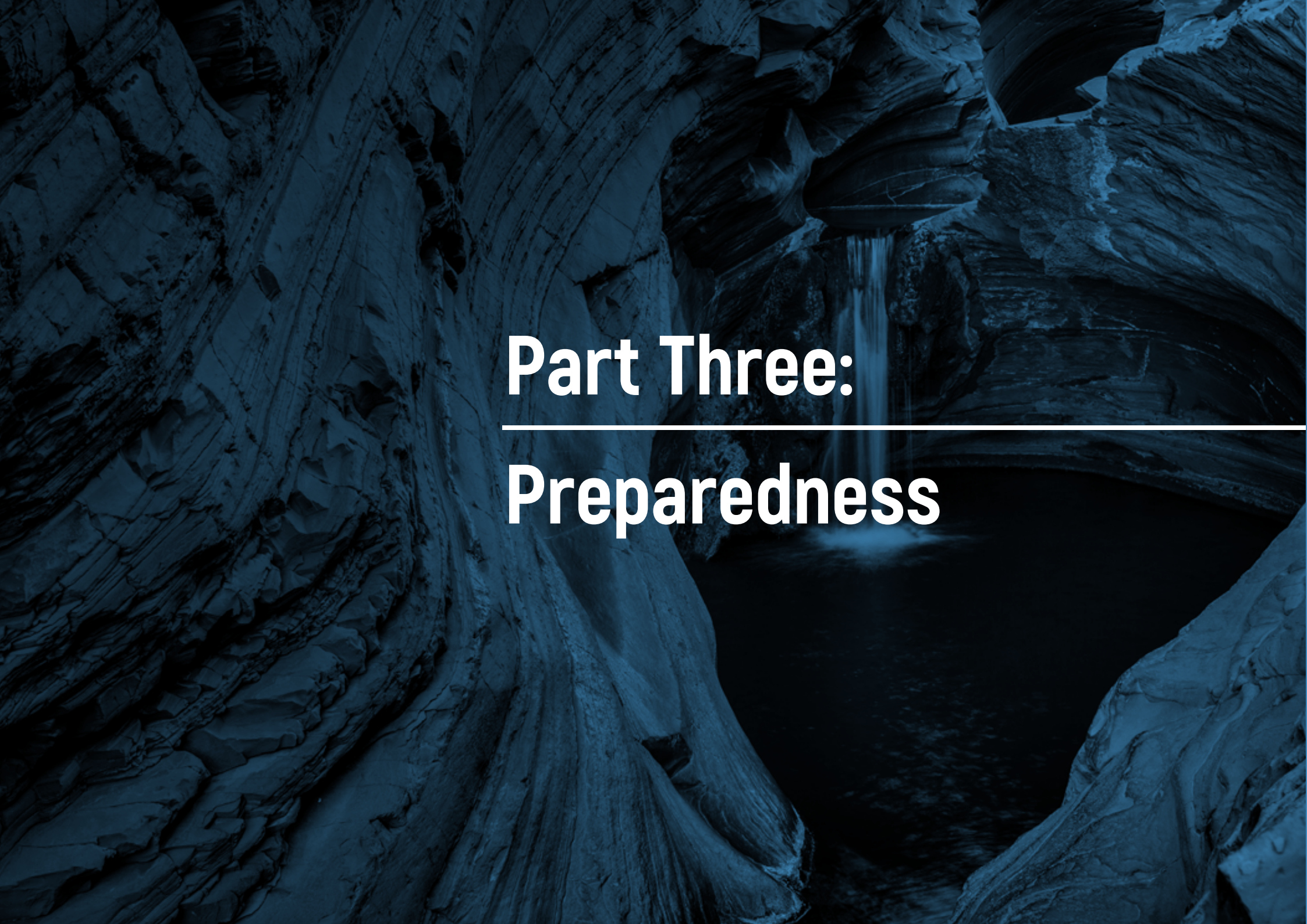
To ensure a heightened level of safety and readiness is maintained, routine arrangements have been established for any NPW visiting WA. These arrangements are outlined in the State Operational Plan and include:

- when a visit is confirmed to take place within 42 days and will continue until the NPW has entered port limits
- while the NPW is inside port limits
- when the NPW clears port limits.

2.3.1 Nuclear Powered Warship Visiting Ships Coordinating Committee (NPWVSCC)

The NPWVSCC will liaise with the Port Nuclear Safety Panel and meet as required to ensure that:

- a Visit Operation Order for the specific visit is issued
- an assessment of the state of preparedness of all involved State organisations is ascertained
- liaison as required is carried out with Commonwealth organisations to ensure that the necessary support is available
- a pre–visit exercise may be conducted.



Part Three:

Preparedness

3.1 Responsibility for Preparedness

The FES Commissioner, as the HMA, has overall responsibility for State preparedness in relation to visits by NPW within Western Australia. To ensure that this responsibility is met, DFES preparedness activities focus on essential emergency management capabilities through the development of plans, procedures, organisation, management of resources and training. This includes:

- the preparation of SHP - NPW on behalf of the SEMC
- the State Operational Plan
- activating and managing the above plans as required.

3.2 Capability Baseline

The reference accident (see Appendix B), used to provide a basis for the assessment of the suitability of Australian ports for use by NPWs, for developing port safety plans and ensuring consistency across jurisdictions, is also the capability baseline used for this Plan.

3.3 Preparing the Community

DFES, Radiation Health and relevant local governments will work together to develop awareness of any community risks relating to an NPW. As required, the public is to be informed of the risks, impact probabilities, emergency management plans at all levels, warning and response arrangements and any actions which may be expected of them.

3.4 Preparedness Arrangements

3.4.1 Local Emergency Management Arrangements (LEMA)

The inclusion of arrangements for visits by NPWs as a specific hazard is only required for local governments in Emergency Management Districts that have an approved berth within their boundaries.

3.4.2 Naval Nuclear Ships Safety Organisation

The Commanding Officer (CO) of HMAS *Stirling* or the local Department of Defence representative is responsible for activating the Naval Nuclear Ships Safety Organisation (NNSSO). The NNSSO is placed on standby prior to and during an NPW visit and is responsible for coordinating arrangements and safety aspects of NPW visits on behalf of RAN.

The NNSSO is responsible for the HMAS *Stirling* NPW Visit Port Safety Plan and implementation in an emergency.

3.4.3 Port Nuclear Safety Panel

Upon confirmation that the visit of an NPW is to take place, the Port Nuclear Safety Panel will meet as required to:

- establish and maintain a communication link between the NPW, the State Operations Centre, the Water Police Coordination Centre, and specified personnel
- discuss the Visit Operation Order for the visit (prepared by the DFES)
- facilitate all routine arrangements relating to the Port with respect to NPW visits.

3.4.4 Australian Government arrangements

ARPANSA are the Australian Government Coordinating Agency (AGCA) for radiological and nuclear emergencies under the Australian Government

Crisis Management Framework (AGCMF). ARPANSA and other relevant Australian Government agencies roles and responsibilities are outlined in the AUSRNEPLAN.

ARPANSA will coordinate the national response through the Radiation Emergency Coordination Centre (RECC). Australian Government agencies will deploy personnel to WA prior to the arrival of an NPW, to provide support before, during, and after visits. This includes Liaison Officers (LO), radiation specialists and monitoring support.

If additional non-financial assistance is required, the State may request for assistance through the Australian Government Disaster Response Plan (COMDISPLAN), refer to section 4.2.2 of this Plan.

3.4.5 Radiation Monitoring

A Radiation Monitoring Group (RMG) is formed for each NPW visit to a primary port and made responsible for both routine and emergency radiation monitoring.

NPW visits to secondary ports do not require a full RMG, however a minimum of one person equipped with a portable radiation detector is required to be located on the shoreline in proximity of the vessel transfer position.

The RMG will be established in Fremantle and Cockburn Sound and will comprise:

- Leader Radiation Monitoring Group (LRMG), provided by the Australian Government through ANSTO, responsible for the coordination of all radiation monitoring functions
- Technician RMG provided by RAN and/or ANSTO
- Continuous radiation monitoring post manned by RAN or Royal Australian Navy Reserve personnel for the purpose of providing early warning of a release of radioactive material
- Mobile Monitoring Units (referred to as Field Assessment Team in OPSMAN 1) comprising of a Health Physicist from the Department of Health's Radiation Health section and a driver designated by the RAN (these units will be equipped by the Commonwealth and used in immediate response to a radiation emergency).

As per Commonwealth requirements for the visit of an NPW, Routine Monitoring Procedures will be carried out in accordance with OPSMAN 1 and are set out in the State Operational Plan.

3.5 Preparing for Response

This Plan details the safety arrangements for visits by NPWs primarily to the Port of Fremantle and Cockburn Sound, and, in an emergency, at King George Sound in Albany.

3.5.1 Protective zoning

During all visits, the Australian Federal Police may routinely enforce a **100 Metre Exclusion Zone** around the NPW.

Berthing Area Control

Authority for the control of anchoring activities is vested in the Duty Officer, Fremantle Port Authority or King George Sound, Albany, as appropriate. The Harbour Master is responsible for overseeing all marine measures for the entry of an NPW to the port, and its subsequent anchoring and sailing.

Precautionary Action Zone (PAZ)

An appropriate Precautionary Action Zone will be determined for each approved anchorage, which defines the radius around an NPW that will require automatic evacuation on confirmation of a release of radioactive material.

The Officer in Charge (OIC) of the PAZ has responsibility for overseeing operations within the PAZ, including evacuation if necessary. The OIC PAZ will be a DFES officer as appointed by the HMA/delegate, other than for vessels

berthed at HMAS *Stirling*, where the OIC PAZ will be a Naval Officer appointed by the CO HMAS *Stirling*.

During the period of entry to the port by the NPW, and its subsequent anchorage, the AFP will implement and administer security procedures within the PAZ as determined by the threat assessment and conditions encountered.

Urgent Protective Action Planning Zone (UPZ)

An Urgent Protective Action Planning Zone is an area where preparations are made to promptly perform environmental monitoring and implement urgent protective actions based on the results of radiation monitoring.

Extended Planning Distance (EPD)

An Extended Planning Distance represents an area within which risks may arise from ingestion hazards caused by contamination of water, foodstuffs, milk, and agricultural produce, and it includes both the PAZ and UPZ.

Further details of these protective zones are set out in the State Operational Plan.

3.5.2 Removal of the NPW

A Commonwealth condition of entry for a visit by an NPW is that the vessel must be able to be removed to sea or to the remote anchorage within a specified time limit following a confirmed alarm, which will be set out in the Visit Operation Order for the visit.

The decision to recommend the removal of the NPW will rest with the Incident Controller on advice from the State Radiation Officer (SRO) in the event of:

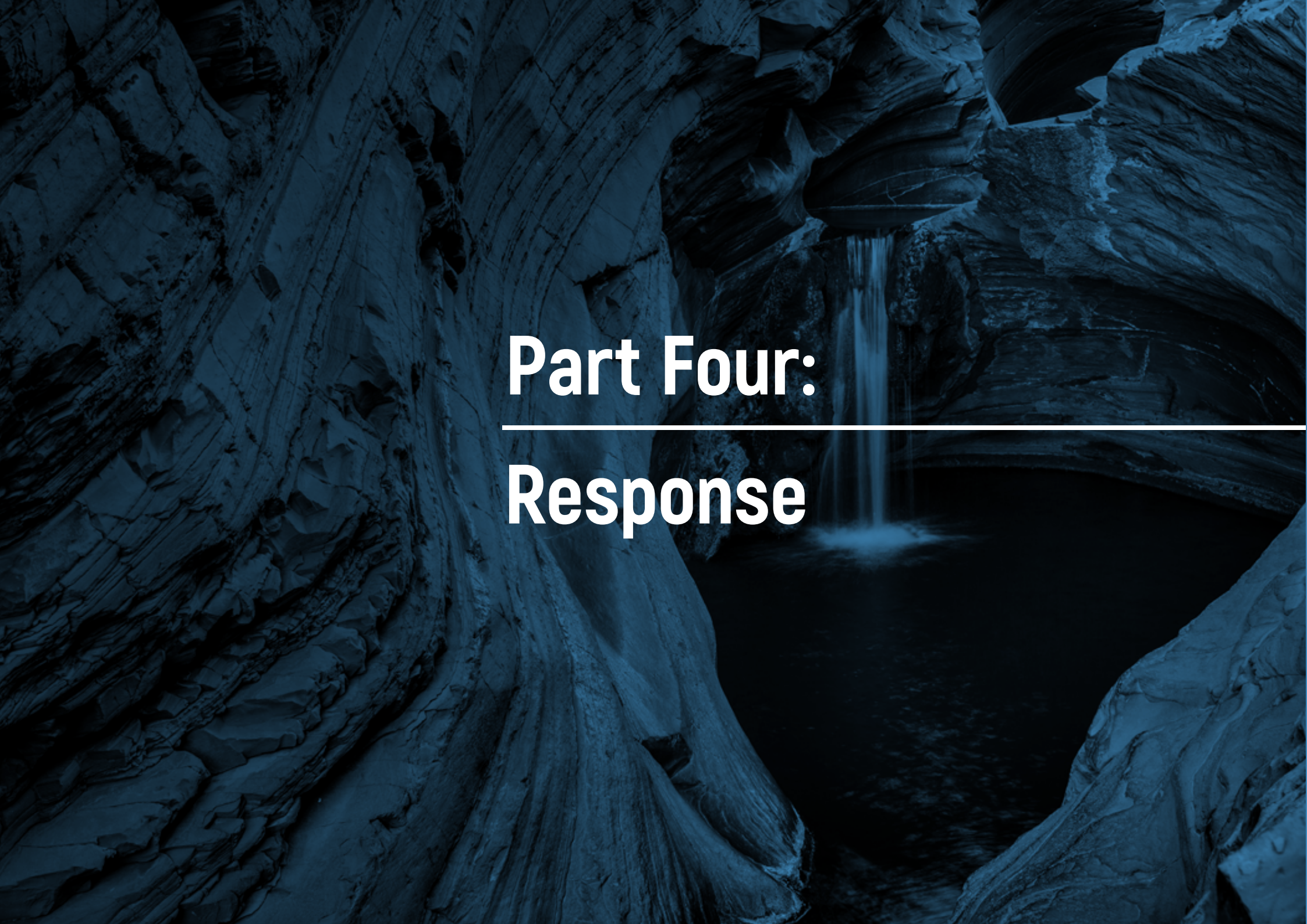
- a confirmed alarm indicating elevated gamma levels, or
- the NPW advises that such an event may occur as a result of a current problem.

Reference should be made to OPSMAN 1 for further guidance for decision makers on the removal of an NPW following the release of radioactive material.

3.5.3 Protective countermeasures

The location of all anchorages is such that the PAZ and UPZ consists mainly of persons on the water and therefore there will only be a limited need for the application of countermeasures. This may include administration of iodine tablets to official personnel as deemed appropriate by the SRO and to the public as authorised by the State Health Coordinator on the advice of the SRO. Further operational guidance for protective countermeasures can be found in the State Operational Plan.

Evacuation is expected to be restricted to the PAZ and UPZ, which would mainly consist of people participating in boating activities.



Part Four:

Response

4.1 Responsibility for Response

The FES Commissioner, as the HMA for the release of radioactive material from an NPW, has overall responsibility for ensuring there is an adequate response. An effective response requires collaboration between the vessel's sovereign state and Commanding Officer, State/Commonwealth agencies, and public authorities.

The NPW Commanding Officer and the vessel sovereign state are responsible for initial emergency response actions. Response at the incident site, once known, will follow the principle of a graduated approach.

The SRO, assisted by the LRMG, is responsible for provision of advice to the FES Commissioner on the necessary steps to counteract or minimise the effects of radiation on emergency service personnel and members of the public.

The FES Commissioner may delegate control of the emergency response if required.

State agencies and public authorities must provide assistance and support to the HMA and Controlling Agencies in line with their respective roles and responsibilities outlined in the State EM Policy and Plan.

4.1.1 Controlling Agencies

The release of radioactive material from an NPW within WA requires a high level of coordination between DFES, RAN, ARPANSA, the NPW Commanding Officer, and sovereign state. Depending on the location and nature of the incident, multiple Controlling Agencies may exist simultaneously, for their respective area of responsibility. A Controlling Agency's area of responsibility is determined in accordance with WA and Commonwealth legislation. Table 1 outlines the Controlling Agency responsible for initiating emergency response within each jurisdiction.

Occupiers of Commonwealth land must comply with all relevant legislation, regulations and standards that relate to the activities being undertaken on the land on which they occupy.

Should a release of radioactive material from an NPW affect Commonwealth land or involve Commonwealth buildings or assets that lie within the geographic boundaries of WA, they remain subject to WA legislative arrangements unless overriding Commonwealth legislation exists by virtue of the *Commonwealth Places (Application of Laws) Act 1970* (Cth), section 4.

Where required under legislation or deemed appropriate, occupiers of Commonwealth land are to enter into agreements with Controlling Agencies that clearly identify response responsibilities and identify any relevant criteria that may lead to a transfer of control to a WA state-based Controlling Agency. Any such agreement should be documented in relevant local/district/regional response arrangements.

Table 1. Initial Controlling Agencies area of responsibility

Jurisdiction	Controlling Agency NPW In-hull	Controlling Agency NPW Outside-hull
Naval waters (including Garden Island)	Vessel sovereign state	Royal Australian Navy - HMAS Stirling
Commonwealth waters	Vessel sovereign state	ARPANSA
State waters (including Port waters)	Vessel sovereign state	DFES

4.2 Response Arrangements

The response aspects of this Plan are automatically activated upon the advice of a radiation alarm as outlined in section 4.3.

4.2.1 Unified command

Unified command is essential for effective emergency management, particularly for incidents where the area of operations or consequence extends across multiple jurisdictions and involves several Controlling Agencies. Unified command for an NPW incident can be achieved by applying the JESIP (2024) *Principles for Joint Working*, Co-location, Communication, Coordination, Joint Understanding of Risk, and Shared Situational Awareness, to promote interoperability, reduce duplication, and enable timely, consistent decision-making across agencies. Appendix D (Figure 1) provides a diagram illustrating control and coordination arrangements to support a unified command. Further details on these arrangements are outlined in the State Operational Plan.

4.2.2 Australian Government arrangements

ARPANSA as the AGCA will coordinate the Australian Government response in accordance with AUSRNEPLAN. Upon notification of the anticipated or actual release of radioactive material from the NPW, ARPANSA will activate the Radiation Emergency Coordination Centre (RECC) which provides specialist support and coordination between jurisdictions.

The provision of Australian Government Non-Financial Assistance is dependent upon established criteria and requesting arrangements. All requests for Australian Government non-financial assistance are to be made in accordance with State EM Policy section 5.10, State EM Plan section 5.6 and State EM Response Procedure 4.20.

Long-term actions such as radiation and contamination surveys and remedial activities may require Commonwealth support.

Overseas assistance (and the process involved) will need to be determined at the time of the incident.

4.3 Notifications

Notification to implement emergency procedures in response to a release of radiological material will arise from the following circumstances:

- the continuous radiation monitoring system indicates a radiation alarm; or
- the NPW advises of an alarm.

Emergency procedures required are similar for all classes of NPWs. The evacuation plan set out in the State Operational Plan will be implemented by DFES on the advice of the SRO.

4.4 Incident Management

4.4.1 Initial alarm

Actions to be carried out on initial alarm are set out in the State Operational Plan.

For the Port of Fremantle and Cockburn Sound, this includes actions for but not limited to:

- DFES
- WA Police Force
- SRO
- LRMG, Continuous Radiation Monitoring Vessel and land-based Mobile Monitoring Units.

For King George Sound, Albany, this includes actions for DFES District Officer State Situation (DOSS) and the SRO.

4.4.2 Confirmed alarm

Further actions to be carried out on the confirmation of an alarm (by either the NPW or Continuous Monitoring Post) are set out in the State Operational Plan. The NPWVSCC will be either notified or activated for all NPW radiation incidents to assist the HMA or Controlling Agency with coordination and technical advice.

For the Port of Fremantle and Cockburn Sound, this includes actions for but not limited to:

- DFES Metropolitan Duty Coordinator (MDC)
- Metropolitan Operations Centre (MOC)
- DFES COMCEN
- WA Police Force
- SRO
- LRMG (RMG)
- Continuous Radiation Monitoring Vessel and land-based Mobile Monitoring Units
- Harbour Master (Fremantle Port Authority)
- RAN (HMAS *Stirling*)
- ARPANSA LO.

For King George Sound, Albany, this includes actions for:

- DFES Regional Duty Coordinator (RDC), or relevant Regional Operation Centre (ROC)
- DFES COMCEN
- WA Police Force
- SRO
- Harbour Master (Southern Ports Authority)
- RAN.

4.4.3 Radiation monitoring

The RMG will initiate emergency Radiation Monitoring Procedures on confirmation of a potential or actual release of radioactive material.

Emergency radiation monitoring procedures for King George Sound, Albany will be initiated on notification by the NPW Commanding Officer , or representative. The Department of Health's SRO will recommend the monitoring locations to the HMA.

Radiation reports are to be compiled and communicated back to the ICC from monitoring teams in accordance with procedures detailed in the Radiation Monitoring Handbook: Nuclear Powered Warships (ANSTO, 2024).

4.4.3.1 Radiation Monitoring of Emergency Service Personnel

DFES and other emergency service personnel who are required to function in areas classified as risk areas for inhalation or ingestion of radioactive iodine will be issued with stable iodine tablets on advice by the SRO.

In zones affected by the radioactive plume, or identified contamination, or contaminated persons or equipment, emergency service personnel shall be provided with personal radiation monitors in order to estimate the possible excess dose from gamma shine received during the period of duty. Personal radiation monitoring requirements will be under the control of the SRO.

4.4.4 Declaration of an Emergency Situation or State of Emergency

Additional powers for a release of radioactive material from an NPW can be accessed through the EM Act on declaration of an 'Emergency Situation' or a 'State of Emergency'.

Relevant DFES officers carrying out emergency management duties in responding to any emergency situation declared by the FES Commissioner have been authorised to act as Hazard Management Officers (HMOs). In addition, a standing HMO authorisation is in place for any Police Officer or employee of the Police Service tasked with an operational support role

and who is carrying out emergency management duties in response to the declared emergency situation.

Further, other employees or other persons may be authorised by the FES Commissioner to act as HMOs during a declared emergency situation.

HMOs may exercise a power under Part 6 of the EM Act subject to the terms and conditions on which they have been authorised.

If a State of Emergency is declared, the State Emergency Coordinator may authorise persons to act as Authorised Officers during a state of emergency declared by the Minister for a release of radioactive material from an NPW.

A standing authorisation is in place for any Police Officer or employee of the Police Service to act as an Authorised Officer when tasked with an operational support role, and who is carrying out emergency management duties during a State of Emergency.

Authorised Officers may exercise a power under Part 6 of the EM Act subject to the terms and conditions on which they have been authorised.

4.5 Public Information and Warnings

The HMA is responsible for the management of media and public information in accordance with the State EM Plan section 5.3.1 and the State Support Plan - Emergency Public Information.

During NPW incidents that involve multiple jurisdictions, coordination and dissemination of public information and warnings should follow the principles of Unified Command (section 4.2.1).

WA State agencies and emergency management organisations must coordinate all public information with the HMA. With the HMA's approval, they should only release information that relates specifically to their organisation's function.

The broadcasting of information must be appropriate for the severity and timing of the predicted emergency. Advice may be to shelter in place or to evacuate, depending on the circumstances. Iodine tablets will be available for administration where appropriate, on the advice of the SRO.

4.5.1 Standard Emergency Warning Signal

The Standard Emergency Warning Signal (SEWS) is a distinctive siren sound to alert the community to the broadcast of an urgent safety message relating to a major emergency.

SEWS is intended for use as an alert signal to be played on public media such as radio, television, or public address systems to draw listeners' attention to the emergency warning that follows. SEWS should only be used when issuing Emergency Warnings when there is a need to warn people to take urgent and immediate action to reduce the potential for loss of life or property from emergency events.

State EM Response Procedure 4.3 describes the conditions and procedures for use of the SEWS.

4.5.2 Emergency Alert

Emergency Alert is a Telephone Warning System (TWS) that uses web technology to send alerts to home phones and mobiles. It is an additional public information tool that can be used for any emergency where there is an imminent threat to alert people in a specific location.

When an initial emergency warning area is issued, or an emergency warning area changes, a TWS will be issued.

4.5.3 Emergency WA

The Emergency WA website and application provide official alerts and warnings for incidents.

4.6 Evacuation Arrangements

Emergency procedures will be undertaken where the continuous radiation monitoring system indicates a radiation alarm or the NPW advises an alarm. The SRO will advise the Incident Controller of the protective measures that need to be implemented, including possible initial shelter-in-place and evacuation directives. In the event of a release of radioactive material from an NPW, an assessment will be conducted to ascertain the suitability of the vessel being removed.

The decision to undertake an evacuation will be made by the Incident Controller. Evacuation procedures are outlined in the State Operational Plan. The evacuation of the PAZ is to be automatically initiated upon the notification of a release of radioactive material. A decision to evacuate the UPZ will be based on radiation data obtained from the mobile monitoring teams and assessed by the SRO and LRMG. Evacuation requirements for each phase are set out in Appendix G.

Where necessary, the WA Police Force and AFP will assist the respective Controlling Agencies with the security and evacuations.

Should community evacuation be necessary, it will be carried out in consultation with relevant agencies, as appropriate, in accordance with:

- State EM Policy section 5.7
- State EM Plan section 5.3
- State EM Response Procedures 4.8 and 4.17
- SEMC Western Australian Community Evacuation in Emergencies Guideline
- Local evacuation plans.

4.6.1 Decontamination

Persons classed as being potentially contaminated will be:

- any persons evacuated from the NPW following a confirmed alarm
- all persons evacuated from the PAZ and UPZ
- RMGs and other emergency personnel operating in the downwind sector.

The decontamination location will be established dependent on the prevailing conditions in consultation with and at the direction of the Incident Controller.

The Department of Health will supply a Health Physicist to oversee decontamination. Decontamination will need to be isolated from the general public to avoid the pick-up and spread of contamination.

Potentially contaminated persons will be checked, decontaminated if necessary, and their details recorded at decontamination locations in accordance with the State Operational Plan.

Any injured persons will be treated, checked for contamination and transferred to seek further medical attention if required, together with information as to whether or not they will require decontamination at a later stage.

Disposal of water used in the decontamination process will be carried out in consultation with the appropriate regulators and will be in accordance with the *Radiation Safety (General) Regulations 1983 and Environmental Protection Act 1986*. Further details are provided in the State Operational Plan.

Reference should also be made to the Australian Clinical Guidelines for Radiological Emergencies 2012.

4.6.2 Controlling movement within an operational area

The Controlling Agency may establish exclusion zones during a response to a release of radioactive material from an NPW. The WA Police Force, AFP and Department of Transport may assist the HMA in maintaining these exclusion zones.

4.6.3 Evacuation centres

Where there is the potential requirement for an evacuation centre to be activated, the location of the evacuation centre/s is determined by the HMA

in consultation with the relevant local government and the Department of Communities. Where practicable, suitable evacuation centres identified in Local Emergency Management Arrangements should be utilised

The primary purpose of the evacuation centres is to cater for the short-term needs of evacuees. It is anticipated that the majority of evacuees will not remain in the vicinity and will not require assistance.

4.7 Hostile Act and Terrorism Act Arrangements

The Commissioner of Police is the HMA for hostile and terrorist acts.

It may take some time before it becomes apparent that the release of radioactive material from an NPW was the result of a hostile or terrorist act. An incident should not be referred to as a hostile or terrorist act by any responding agency unless the Commissioner of Police has made this determination. Where the cause of an emergency is not apparent and a hostile or terrorist act cannot be readily discounted, the WA Police Force shall be notified and may deploy to commence investigations.

If the emergency is the result of a hostile act or terrorist act, the incident will be dealt with in accordance with the State Hazard Plan – Hostile Act or State Hazard Plan – Terrorist Act respectively and WA Police Force will take control of the emergency on behalf of the HMA, Commissioner of Police.

Where the release of radioactive material from an NPW is the result of (or is suspected to be a result of) a hostile act or terrorist act, DFES Operations staff will operate under a WA Police Force Commander. DFES will be tasked in accordance with WA Police Force procedures during such incidents. Once it is determined that the emergency is not the result of or is no longer a terrorist or hostile act emergency, DFES will, by agreement, assume roles and responsibilities as the Controlling Agency as per State EM Plan section 5.1.2.

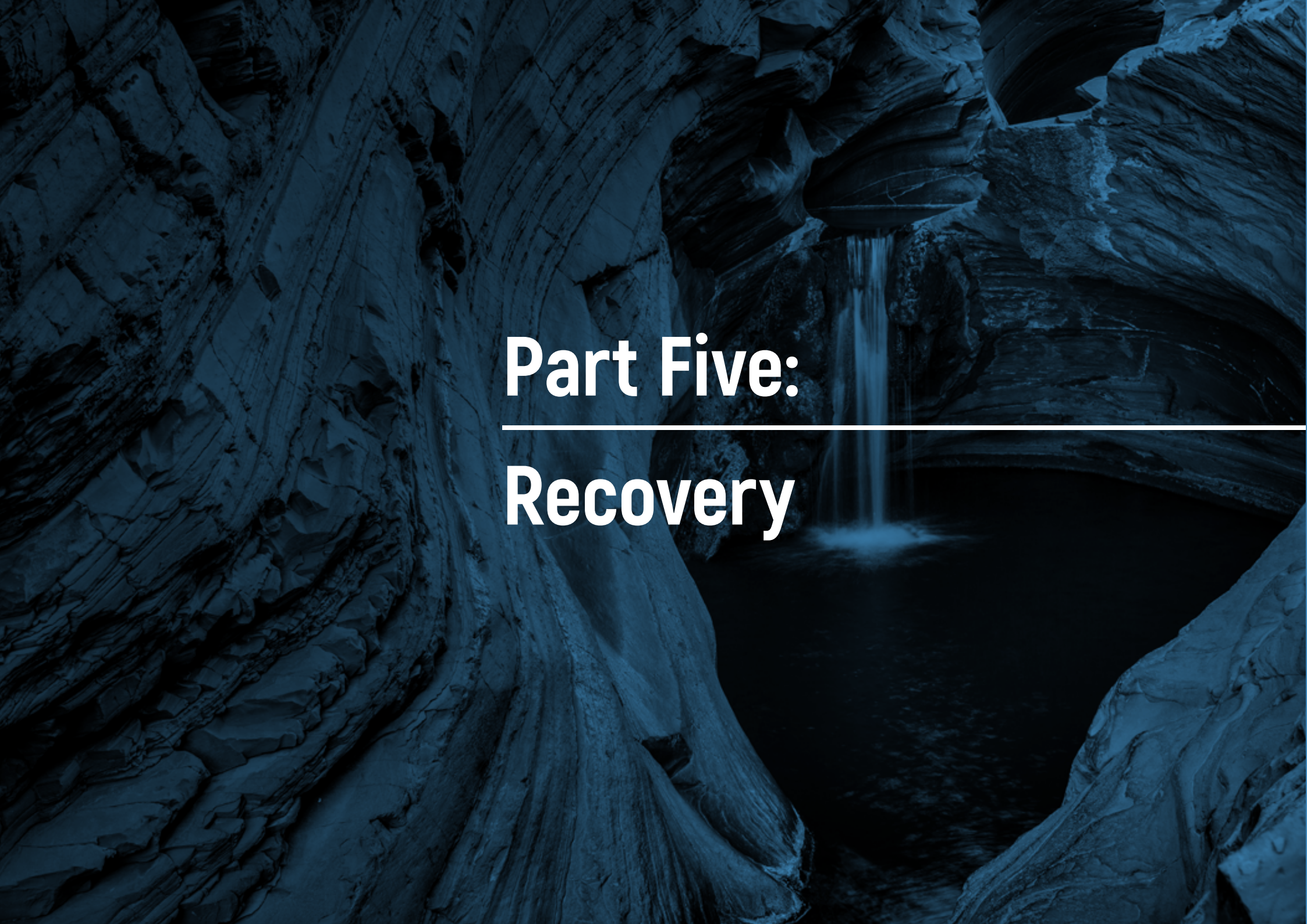
These arrangements are in accordance with the National Counter Terrorism Arrangements, with further actions undertaken as required under national and state policies and plans.

4.8 Funding Arrangements for Response

Generally, to ensure accountability for expenditure incurred, the organisation with operational control of any resource shall be responsible for payment of all related expenses associated with its operation during emergencies unless other arrangements are established.

Detailed information in relation to the financial responsibilities of participating organisations is outlined in State EM Policy section 5.12, State EM Plan sections 5.4 and 6.10 and State EM Recovery Procedure 5.2.

Agencies and departments are requested to maintain a record of all costs incurred in providing assistance.



Part Five:

Recovery

Recovery involves "restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and 'build back better', to avoid or reduce future disaster risk" (Australian Disaster Recovery Framework (2022)).

In WA, recovery activities are underpinned by State Strategic Recovery Priorities:

- Community-centred and place-based
- Timely, responsive and accessible
- Restore and build back better
- Value First Nations Voice

Recovery begins at the onset of an emergency and runs concurrently with response, often continuing beyond the response phase. The extent of recovery activity will, however, depend on the nature and magnitude of the emergency.

5.1 Responsibilities for Recovery

The FES Commissioner, as the HMA, is responsible for commencing recovery as soon as practicable during an emergency (State EM Policy section 6.2). Under this Plan, DFES is assigned to carry out the following recovery responsibilities on behalf of the HMA:

- initiating recovery activities
- preparing an Impact Statement for Level 2 and 3 incidents unless an exemption has been granted by the State Recovery Coordinator
- transitioning responsibility of any ongoing coordination of recovery activities to the relevant local government, unless otherwise advised by the State Recovery Coordinator.
- in emergencies where response and recovery occur concurrently, establishing arrangements to coordinate response and recovery operations with relevant local and state-level recovery coordinators / controller.

Less complex recoveries will be managed by local government with support by State Government through existing services and agency support, as required. Where recovery needs exceed the capacity of local government, the State will have an increased involvement which may include appointing a state-level recovery coordinator or controller, convening a State Recovery Coordination Group and State Recovery Domains and deploying personnel and resources to plan and deliver recovery programs and activities.

DFES, in its capacity as the lead State agency for state-level recovery coordination (DFES State Recovery) is responsible for coordinating a whole-of-government approach to recovery operations across all hazards and supporting local governments in the management of community recovery.

Further information regarding recovery coordination arrangements in WA is set out in State EM Policy, Plan and Procedure.

5.2 Recovery Characteristics and Considerations

All recoveries are different, determined in part by the type of hazard, complexity, scale and duration of the emergency and the strengths and vulnerabilities of the impacted community, environment and economy.

The distinguishing characteristics of recovery following a release of radioactive material from an NPW may include:

- impacts from response measures: implementation of exclusion zones, population movement controls and isolation from potentially contaminated areas may disrupt transport, utilities and essential services. These disruptions may lead to economic loss, business interruptions and income impacts for individuals and communities

- inter-jurisdictional government coordination: effective recovery coordination will require collaboration and coordination across local, state, national and international governments, particularly in managing public health, environmental remediation and public information strategies
- environmental remediation and monitoring: assessment and mitigation of contamination risks to the marine environment, groundwater and surface water resources, foodstuffs, and agricultural products are essential to restoring public confidence and safety. Recovery activities are likely to include comprehensive clean-up operations and the implementation of long-term environmental monitoring programs to detect and manage any residual radiation or contamination
- health and wellbeing support: provision of medical care, mental health services and community wellbeing initiatives to support affected populations and help individuals feel safe and secure in their homes and communities.

5.3 Commencing Recovery

DFES, on behalf of the HMA, is responsible for commencing recovery in accordance with section 6.2 of the State EM Plan. This includes notifying State and Local Recovery Coordinators, activating State Support Plans where required, coordinating essential services restoration and clean-up and monitoring and assessing impacts.

DFES will implement processes that facilitate engagement between the incident management team and recovery liaison personnel from local government, state agencies, DFES State Recovery, and relevant national recovery partners. This will assist in ensuring proactive and coordinated communication between response and recovery operations.

5.3.1 Recovery public information

As soon as practicable, DFES and the State Emergency Public Information Coordinator (SEPIC), where activated, will incorporate information about recovery services available into public information issued during the response phase. DFES or the SEPIC, where activated, may request assistance from the State Recovery Coordinator to coordinate recovery information and advice from State agencies, national and international governments.

5.3.2 Impact statement

An impact statement is required for all Level 2 and 3 incidents unless an exemption has been provided by the State Recovery Coordinator. If required, DFES will provide the Impact Statement during the transition briefing. If the Incident Controller is unavailable to approve it, the relevant Regional Chief Superintendent may approve on behalf of DFES.

5.4 Transition of Recovery Coordination

Where recovery activities initiated during the response phase require ongoing coordination, DFES on behalf of the HMA is responsible for transitioning responsibility for recovery coordination to the relevant local government, or where appointed, a State-level Recovery Coordinator / Controller.

Recovery from a release of radioactive material from an NPW emergency will likely include significant coordination at a state, national and, potentially, international level. Given the complexity of inter-jurisdictional coordination and potential scale of community and environmental impacts, recovery will likely exceed local government capacity and capability to manage, and a State-level Recovery Coordinator or Controller appointed.

The State-level Recovery Coordinator or Controller may be hosted by DFES State Recovery or another central agency, depending on the nature of negotiations required and inter-governmental arrangements in place.

The timing of transition will depend on conditions and occur when affected areas have been made safe and access is sufficiently restored so that recovery activities can proceed safely. This requires a stable situation where radiation levels and exposure risks are clearly understood and agreed

arrangements in place define State and national roles for continuing response activities, including clean-up, decontamination and long-term monitoring.

Prior to transition, consideration should also be given to whether powers and resources available to DFES during response, are still required to support early recovery efforts. If these capabilities remain essential, transition may need to be delayed until they are no longer needed.

As part of the transition process, the DFES Incident Controller will brief the relevant Recovery Coordinator or Controller and the State Recovery Team/ host agency, providing details on recovery needs, public information and recovery activities already underway and roles and responsibilities of State, national and international government agencies and partners.

5.4.1 Concurrent response and recovery operations

Where response clean-up, decontamination and monitoring activities extend over time and concurrently with recovery activities, DFES will establish arrangements to coordinate response and recovery operations with the relevant recovery coordinator/controller.

5.5 Recovery Operations

DFES State Recovery will play a significant role in recovery operations, including hosting the Recovery Coordinator or Controller, or where that role is hosted by another agency, provide support and assistance as required.

On behalf of the HMA for HAZMAT, DFES may also contribute technical advice and subject matter expertise to assist the State Recovery Coordination Group and Recovery Domains.

5.5.1 Recovery funding

Funding for recovery from a release of radioactive material from an NPW is not eligible under the Disaster Recovery Funding Arrangements Western Australia. Alternative funding arrangements will need to be agreed between State and Commonwealth Governments.

5.5.2 Transition to business-as-usual arrangements

Recovery arrangements led by local and State governments may be de-escalated or stood down when recovery coordination and delivery can be effectively delivered through standard business-as-usual arrangements (State EM Policy section 6.13 and Plan section 6.3.3).

Appendices

Appendix A: Distribution List

This Plan is available on the SEMC website. The agencies below will be notified by the HMA (unless otherwise specified) when an updated version is published on the website.

- All agencies and organisations with responsibilities under this Plan including:
  - Fremantle Port Authority
  - Southern Ports Authority
  - Royal Australian Navy (HMAS *Stirling*)
  - Australian Radiation Protection and Nuclear Safety Agency
  - Australian Nuclear Science and Technology Organisation
- Chairman Visiting Ships Panel (Nuclear) (SEMC Business Unit to notify)
- National Emergency Management Agency (NEMA) (SEMC Business Unit to notify)
- Minister for Emergency Services (SEMC Business Unit to notify)
- National Library of Australia, Legal Deposits Unit (SEMC Business Unit to notify)
- SEMC, SEMC Subcommittee and SEMC Reference Group members (SEMC Business Unit to notify)
- State Library of Western Australia (SEMC Business Unit to notify)

Appendix B: Glossary of Terms and Acronyms

Terminology used throughout this document has the meaning prescribed in section 3 of the EM Act or as defined in the State EM Glossary. In addition, the following hazard-specific definitions apply.

Table B1: Glossary of Terms

Term	Definition
Accident	As defined in Department of Defence, OPSMAN 1 (2023), 'An accident is any occurrence unintended by the operator, including operating error, equipment failure or other mishap, and deliberate or malicious action on the part of others, the consequences or potential consequences of which are not negligible from the point of view of protection and safety.'
Chain reaction	A process which, once started, provides the conditions for its own continuance. In a reactor neutrons released in the fission process cause further fission.
Containment	The compartment enclosing the reactor plant designed to withstand the build-up of pressure after a severe reference accident and to contain any radioactive releases from an accident in which there is little or no escape into the environment.
Contamination (Radioactive)	The presence of a radioactive substance or substances in or on a material or in a place where they are undesirable or could be harmful.
Coolant	Water which is pumped through reactor core to remove heat generated there.
Core	The region of a reactor containing fuel within which the fission reaction is occurring.
Critical	A reactor is critical when the fission chain reaction is self-sustaining and hence maintains power output from the reactor at a constant level.

Term	Definition
Decay heat	Heat produced by radioactive decay, particularly of fission products, in the reactor fuel. This continues to be produced after the reactor has been shut down. It cannot be shut off, but gradually dies away after the reactor has been shut down.
Decontamination	The removal of radioactive material from a person or surface.
Dispersion	Spread of the hazardous material or substances. Parameters such as weather (especially temperature and wind), substance properties (like volatility and specific weight: lighter or heavier than air) and topographical conditions have great influence on the dispersion.
Dose (of radiation)	Radiation doses are a measure of the amount of exposure to radiation. Equivalent dose and effective dose are specifically for radiological protection purposes. Effective dose in particular is a central feature of radiological protection. It sums up any number of different exposures into a single number that reflects, in a general way, the overall risk.
Emergency Planning Zones	Zones designated around NPW berths and anchorages for planning purposes to assist in the identification of areas where hazards might arise and to ensure that appropriate protective actions can be taken promptly and effectively in the event of an accident.
Exposure	Process by which the hazardous material or substance becomes available for absorption, swallowing, breathing, touching the skin or eyes of humans. A person can be exposed to radiation (radiant energy or the particles emitted in the transfer of radiant energy) and receive a radiation dose without coming into contact with the substance emitting the radiation.
Fission	Rupture of a nucleus into two lighter fragments known as fission products) plus free neutrons either spontaneously or as a result of a neutron collision.
Fuel	The enriched uranium fabricated for use in the core. Fuel and cladding together comprise the fuel elements.

Term	Definition
Gamma radiation	High energy electromagnetic radiation with considerable penetrating power emitted by most radioactive substances.
Half life	Period of time within which half the nuclei in a sample of radioactive material undergo decay and within which the activity of the sample will decrease by one half.
Iodine	E.g. iodine-131, a biologically hazardous fission product of short half life (8 days) which accumulates in the thyroid gland if inhaled or ingested.
Leader Radiation Monitoring Group (LRMG)	A radiation specialist from ANSTO in location during every visit of NPW, to lead the Radiation Monitoring Group.
Mass decontamination	The planned and structured procedure for the decontamination of a large number of casualties.
Meltdown	The melting of the fuel elements within the core produced when the cooling system is unable to remove the decay heat; normally the result of a loss of coolant accident.
Naval waters (Australian)	Maritime areas officially declared under the *Control of Naval Waters Act 1918* (Cth) as 'naval waters'. These zones are designated by proclamation and include waters adjacent to naval bases, docks, or defence installations. Within these limits, the Commonwealth exercises control for defence purposes, including navigation, security, and protection of naval assets.
Neutron	Uncharged particle, that is a constituent of the nucleus – ejected at high energy during fission, capable of causing fission of any fissile nucleus by collision.
NIMITZ	Class of aircraft carrier.

Term	Definition
OIC PAZ	The Officer in Charge of the Precautionary Action Zone (OIC PAZ) responsible for overseeing operations within the PAZ, including evacuation if necessary.
Plume	The trail of airborne contamination carried by the wind from a radiation accident, fire etc.
Port limits	The legally defined boundaries of a port area, as proclaimed under Western Australian legislation (e.g. *Port Authorities Act 1999* or *Shipping and Pilotage Act 1967*). These limits specify the waters and land within which the port authority exercises jurisdiction over navigation, safety, pilotage, and operational control.
Precautionary Action Zone (PAZ)	A 600 metre circle radius around the berth or anchorage of an NPW-submarine, and an 800 metre circle radius around the berth or anchorage of a NIMITZ-class aircraft carrier, requiring automatic evacuation upon confirmation of a reactor accident.
Radiation	Neutrons, alpha or beta particles or gamma rays which are emitted from radioactive substances.
Radioactivity	Behaviour of substance in which nuclei are undergoing transformation and emitting radiation. It is measured in the number of nuclear disintegrations per second (Bq).

Term	Definition
Reference Accident	A hypothetical accident scenario used for planning for NPW events in the Australian Government plan, OPSMAN 1. It is described on the ARPANSA website, where a link is also provided to the full NPW – Reference Accident 2000 document: https://www.arpansa.gov.au/research/radiation-emergency-preparedness-and-response/visits-by-nuclear-powered-warships In summary, the reference accident is a computer model devised for estimating the nature and extent of the radioactive contamination for a severe accident scenario involving a loss of coolant accident in an NPW reactor and the subsequent release of radioactive material to the environment. The reference accident is used to assess the acceptability of a port for visits by NPWs and to establish the planning zones for the initial radiation emergency response. The reference accident predicts that, after the passage of the radioactive cloud, the two principal pathways for exposure would be through external irradiation and from ingestion of radioactivity. Re-suspension of surface contamination and the subsequent inhalation would be very small. The radiological consequences are calculated and compared with radiological acceptance criteria. The reference accident represents an upper bound risk to the surrounding population, and is used to assist in planning emergency arrangements.
Removal time	As defined in Department of Defence, OPSMAN 1 (2023), removal time refers to the required 'capability to remove the vessel, either under its own power or under tow, to a designated safe anchorage or a designated distance to sea as soon as possible within the timeframe specified for the particular berth or anchorage.'
Self-sustaining	The condition where the reactor is critical and is meeting the electrical demands of the NPW. A typical reactor power state on arrival in harbour and just prior to sailing.
Stable iodine	Iodine that is not radioactive. Iodine taken in this form will block for a time the uptake by the human thyroid gland of any radioactive iodine that may be inhaled or ingested.

Term	Definition
State waters	As defined in the EM Regulations : a. all waters within the limits of the State; and b. all coastal waters of the State within the meaning given in the *Coastal Waters (State Powers) Act 1980* (Commonwealth) section 3(1).
Secondary Port	A secondary port is defined as a port that has been assessed and validated for visits of less than two hours duration (e.g. for medical emergencies and boat transfers). These visits are usually classified as a "Stop and Go" visit. King George Sound, Albany, has been assessed and validated for stop and go visits for emergency purposes only.
Thyroid	In humans, a small gland weighing about 20 grams situated in the lower part of the neck. The gland concentrates and stores iodine taken into the body.
Urgent Protective Action Planning Zone	For an NPW-submarine, its a circle of 2.8 km radius from the berth or anchorage for 24 hour removal time or a circle of 2.3lm from the berth or anchorage for a 4 hour removal time. For a NIMITZ Class aircraft carrier, its a circle of 3.7km radius from the anchorage or berth

Appendix Table B2: Acronyms

Acronym	Meaning
ACNPWVA	Albany Community Nuclear Powered Warship Visits Committee
ANNPSR	Australian Naval Nuclear Power Safety Regulator
ANSTO	Australian Nuclear Science and Technology Organisation
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
COMCEN	DFES Communications Centre
CTA	Commonwealth Technical Advisor
DFES	Department of Fire and Emergency Services
HMA	Hazard Management Agency
HMO	Hazard Management Officer
IC	Incident Controller
ICC	Incident Control Centre
JOSS	Joint Operations Support Staff (Australian Defence Force)
LRMG	Leader Radiation Monitoring Group
NNSSO	Naval Nuclear Ship Safety Organisation
NPW	Nuclear Powered Warship
NPWVSCC	Nuclear Powered Warship Visiting Ships Coordinating Committee
OIC	Officer in Charge
OPSMAN 1	Visits to Australia by Nuclear-Powered Warships, Edition 11 (Department of Defence, 2023)
OSLs	Optically Stimulated Luminescence
RMG	Radiation Monitoring Group
SEMC	State Emergency Management Committee
SRO	State Radiation Officer

Appendix C: Roles and Responsibilities

The following table lists the hazard-specific roles and responsibilities of agencies under this Plan. Details of state agencies with all-hazards roles and responsibilities can be found in the State EM Plan Appendix E.

All agencies should maintain appropriate internal plans and procedures in relation to their specific responsibilities.

Organisation	Responsibilities
Australian Defence Force, Joint Operations Support Staff (JOSS)	a. Provision of liaison to DFES, the WA Police Force and State Government for the Department of Defence.
Australian Federal Police (AFP)	a. Provision of security of the Precautionary Action Zone whilst the vessel is anchored and controlling vessel traffic in the vicinity of the NPW during transit and on request at other times.
Australian Nuclear Science and Technology Organisation (ANSTO)	a. Provision of the Leader, RMG. b. Provision of a technician for the RMG. c. Provision of advice related to all aspects of radiation monitoring. d. Conducting radiation-monitoring operations, in cooperation with State authorities, ARPANSA and the area Naval Commanding Officer. e. Developing, maintaining and, as required, providing and installing appropriate and adequate equipment for routine and emergency radiation monitoring. f. Providing leadership and training of radiation monitoring teams, and pre-visit exercises of the emergency response plan. g. Providing emergency radiation monitoring equipment and appropriate personnel as required in the event of a reactor accident. h. Contacting the ANSTO NPW Coordinator and arranging additional resources if required.

Organisation	Responsibilities
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	a. Provision of Australian Government Liaison Officer to DFES, the WA Police Force and State Government. b. Australian Government Coordinating Agency for radiological and nuclear events, include NPW incidents, as per the Australian Government Radiological and Nuclear Events Plan (AUSRNEPLAN). c. In the event of an incident activation ARPANSA's Radiological Emergency Coordination Centre (RECC). Once activated, and based on the nature of the emergency, the RECC will provide an Australian Government coordinated response, including the provision of whole-of-Australian Government situational awareness, crisis communication coordination, technical, scientific and clinical advice, while engaging with WA. d. Provision of technical advice on all aspects of nuclear reactor safety matters. e. Provision of technical advice on nuclear reference accident modelling. f. Assessment of the suitability of specific ports for visits by NPW against radiological criteria. g. Provision of advice on radiation monitoring proposals. h. Provision of Optically Stimulated Luminescence (OSLs), the assessment of radiation doses recorded by OSLs, and the issuing of assessment certificates and the radiochemical analysis of marine environmental samples. i. Analysis of marine environmental samples.
Bureau of Meteorology	a. Providing the Incident Controller with detailed local area weather forecasts. For routine visits, forecasts for the anchorage site are issued on a twice daily basis for the next 12 hours and include wind speed and direction, forecast weather, an index of atmospheric stability and an outlook for the following 12 hours. Delivery of these products will be via the following Bureau of Meteorology registered users' website. b. Providing observations and forecasts on an hourly basis, on request. c. Providing additional information, such as evidence of inversion layers, temperature, humidity and winds at varying altitudes on request. d. The Regional Director Bureau of Meteorology Western Australia is to be invited as a member of the State Emergency Coordination Group to provide appropriate briefings. e. A Bureau of Meteorology officer may also be located in the ICC to provide updated weather briefings.

Organisation	Responsibilities
Department of Communities	a. Consult with local governments and Emergency Management Agencies, to identify potential refuge sites and evacuation centres appropriate for the hazards identified within a local government area of responsibility. b. Prepare for the provision of emergency relief and support services as outlined in the State Support Plan – Emergency Relief and Support section 3.2. c. During the response to an incident, when required, work with local governments and the HMA to identify suitable evacuation centres. d. Coordinate the delivery of Emergency Relief and Support services to the affected community.
Department of Fire an Emergency Services (DFES)	a. Maintaining, reviewing and updating arrangements and agreements including, this Plan, the State Operational Plan and issue of a Visit Operation Order. The State Operational Plan and/or Visit Operation Order will include arrangements for the: – evacuation of all civilians from the NPW, the Precautionary Action Zone and the Urgent Protective Action Planning Zone – transport or escort of evacuated persons and vessels to the decontamination locations – security of areas and vessels that have been evacuated – registration of personal details of evacuees – provision of an OIC of the Precautionary Action Zone for anchorages – provision of personnel to assist in the supervision and security of decontamination locations – crowd and traffic control arrangements. b. Maintaining and reviewing agency operating procedures. c. All routine and emergency communications and State operational requirements associated with NPW visits. d. Staffing and equipment provision at the Incident Control Centre. e. Provision of appropriate personnel to supporting committees, panels and organisations as necessary. f. Management of any emergency response including dissemination of warnings, public announcements and advice to the public.

Organisation	Responsibilities
Department of Fire an Emergency Services (DFES) (continued)	g. Procurement and coordination of resources and support for any required emergency response including requests to the State Emergency Coordinator (Commissioner of Police) for Commonwealth Support. h. Facilitating protective measures as advised by the State Radiation Officer. i. Control and direction of the Port Nuclear Safety Panel. j. Overseeing communication facilities to support the Port Nuclear Safety Panel. k. Providing advice to the State Emergency Coordination Group on the situation. l. Providing advice on the termination of any emergency. m. Decontamination of casualties and other actions in accordance with this State Hazard Plan – HAZMAT as required.
Department of Health	a. Provision of advice on public health matters, and emergency medical services as required. b. Distribution of prophylactic tablets and advice on dosage. c. Implementation of controls and restrictions of foodstuffs. d. Provision of appropriate personnel to supporting committees, panels and organisations as necessary. e. Provision of a health physicist to oversee decontamination. This includes, but not limited to: – contamination control standards – clinical screening and triage criteria – staff safety advice (including PPE) – advising on wastewater public health considerations – coordinating the interface with ambulance services, RFDS and hospital decontamination processes.

Organisation	Responsibilities
Department of Health (continued)	The Radiation Health section is responsible for: f. Provision of the State Radiation Officer (SRO). g. Provision of two health physics surveyors for mobile monitoring units. h. Distribution of Optically Stimulated Luminescence (OSLs), prior to a visit, collection and forwarding of the OSLs to ARPANSA after the visit. i. Locations of OSLs (identified in the Visits Operation Order).
Department of Health - State Radiation Officer (SRO)	a. Ensuring that all State radiation monitoring facilities are operating. b. Consulting with the LRMG on routine and emergency procedures. c. Consulting with the LRMG on the pattern of field monitoring. d. Provision of advice to the Incident Controller regarding radiological risks and protective countermeasures. e. Consulting with the State Health Coordinator on the distribution of iodine tablets. f. Reviewing the field radiation monitoring measurements and assisting in the interpretation.
Fremantle Port Authority	a. Control of underway NPW in accordance with the Memorandum of Understanding between the Fremantle Port Authority and the Department of Defence. b. Control of commercial vessels in the vicinity of an NPW. c. Communication with the NPW during transit and whilst at Fremantle Port Authority anchorages (Commercial Very High Frequency (30-300 Megahertz) only). d. Surveillance of fixed monitoring equipment located in the Fremantle Port Authority Tower. e. Housing of stable iodine tablets. f. Provision of appropriate personnel to supporting committees, panels and organisations as necessary.

Organisation	Responsibilities
National Emergency Management Agency (NEMA)	a. Managing the Australian Government National Situation Room (NSR) that provides 24/7 all-hazards monitoring and situational awareness. b. Coordination of Commonwealth and jurisdictional capabilities to support jurisdictional response and recovery efforts. c. Alerting relevant Commonwealth authorities of an NPW related incident, through the NSR.
Royal Australian Air Force	a. Providing air support for the transportation of emergency support equipment and other functions as set out in the Department of Defence OPSMAN 1.
Royal Australian Navy (RAN)	a. Safety and security arrangements for the base at HMAS *Stirling.* b. Establishment of the NNSSO during the visit. c. The HMAS *Stirling* NPW Visit Port Safety Plan. d. Provision of OIC for the Precautionary Action Zone, for visits to HMAS *Stirling.* e. Provision of two drivers for State staffed Mobile Monitoring Units of the RMG. f. Provision of a vessel for radiation monitoring of NPW at anchorages. g. Provision of one qualified technician for the RMG. h. Removal of an immobilised NPW from any berth or anchorage. i. Provision of protective clothing for crews of towing vessels. j. Collection of marine environmental samples and their forwarding to the ARPANSA. k. Provision and staffing of the HMAS *Stirling* Emergency Operations Centre. l. Arranging for Notices to Mariners and Airmen. m. Other functions as set out in the Department of Defence OPSMAN 1.

Organisation	Responsibilities
Southern Ports Authority	a. Control of underway NPW including pilot services. b. Control of commercial vessels in the vicinity of an NPW. c. Communication with the NPW during transit and whilst at Southern Ports anchorages (Commercial Very High Frequency (30-300 Megahertz) only). d. Housing of stable iodine tablets. e. Provision of appropriate personnel to supporting committees, panels and organisations as necessary.
WA Police Force	a. On request by the HMA, establishing and maintaining secure perimeters around the emergency site(s) to protect the site, any victims and personal effects, and to permit the other agencies to work unobstructed in the performance of their specified duties. b. On request by the HMA, assist with evacuation of any uninjured survivors to a safe and secure area where the designated relief and support coordinator can assume responsibility for their management. c. Provision of appropriate personnel to supporting committees, panels and organisations as necessary. d. Provision of vessels for evacuation purposes, if required.

Appendix D: Unified Command, Control and Coordination

The area of operations or consequence for a release of radioactive material from an NPW may extend across multiple jurisdictions and involve several Controlling Agencies, each with their own jurisdictional and legislative responsibilities. To ensure effective emergency management and support timely and consistent decision-making all Controlling Agencies must work together as a unified command.

Figure 1 illustrates the key roles and reporting lines of agencies and the coordination links between jurisdictions. This diagram is not intended to be exhaustive of all agencies and roles involved in a response, rather its intent is to facilitate a joint understanding of established structures to support communication and flow of information.

Australian Government Crisis Management Framework (AGCMF)

The AGCMF outlines the Australian Government's crisis management arrangements that uses a 4-tier crisis coordination model and designates Australian Government roles for identified hazards. AUSRNEPLAN is the national plan under the AGCMF that details these arrangements for a radiological or nuclear emergency, such as an NPW incident.

Roles and arrangements under the AGCMF and AUSRNEPLAN are to support jurisdictions and do not override jurisdictional response arrangements. Ministers and senior officials retain their statutory powers and existing executive responsibilities with agencies and officials continuing to report to their respective ministers.

For full details of roles and responsibilities, refer to the respective document linked below:

- Australian Government Crisis Management Framework
- Australian Government Radiological and Nuclear Events Plan

A summary of the key AGCMF coordinating roles and functions included in Figure 1 is provided below.

AGCMF Role	Tier 1-3	Tier 4
Lead Minister	Minister for Health	Prime Minister
Lead Coordinating Senior Official	Chief Radiation Health Scientist / Chief Executive Officer, ARPANSA	Deputy Coordinator-General, Emergency Management and Response, NEMA (DCG EMR NEMA)
Australian Government Coordinating Agency	ARPANSA	NEMA

Lead Minister: responsible for leading and overseeing the Australian government crisis response. The Lead Minister provides advice to the Prime Minister and the National Security Committee of Cabinet (or other Committees of Cabinet) on crisis priorities and response objectives.

Lead Coordinating Senior Official (LCSO): the designated senior official from the AGCA responsible for leading the Australian Government coordination for a significant crisis. The LCSO is responsible for assessing the appropriate tier of coordination required.

Australian Government Coordinating Agency (AGCA): the agency required to lead crisis coordination including response activities (within its agency functions) across the Australian Government.

National Coordination Mechanism: the peak senior officials' crisis coordination mechanism providing a national picture of crisis to governments and key stakeholders before, during and after a crisis.

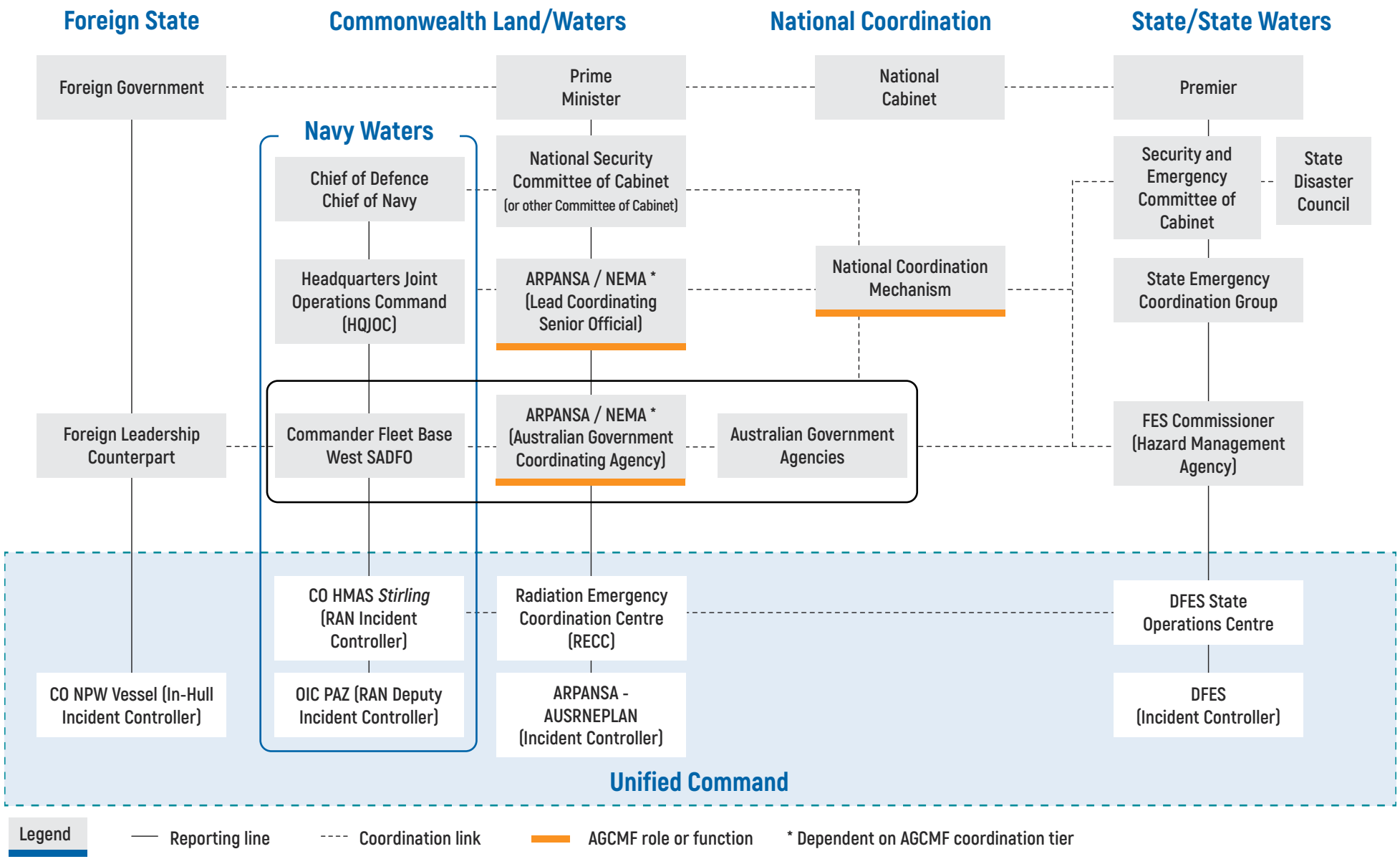


Figure 1. Unified Command, Control and Coordination Structure

Note: Print on A3 to pass print accessibility

Appendix E: Supporting Committees, Panels and Organisations

E1 Nuclear Powered Warship Visiting Ships Coordinating Committee (NPWVSCC)

This committee has been formed to prepare a plan and to coordinate the procedures necessary to deal with the visit of an NPW to WA.

The NPWVSCC comprises:

- DFES Future Capability (Chair and Executive Officer)
- WA Police Force, Counter Terrorism and Emergency Response Command
- WA Police Force, Water Police
- WA Police Force, State Security Investigation
- Department of Health (Radiation Health)
- Royal Australian Navy
- Australian Defence Force JOSS, WA
- Fremantle Port Authority
- Southern Ports
- Ships Husbanding Agent.

Liaison is established with the following Commonwealth authorities involved in the visits of NPWs to Australian Ports:

- Visiting Ships Panel (Nuclear)
- Australian Naval Nuclear Power Safety Regulator (ANNPSR)
- Australian Nuclear Science and Technology Organisation (ANSTO)
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
- National Emergency Management Agency (NEMA)
- Bureau of Meteorology
- Commonwealth Department of Health
- Commonwealth Department of Infrastructure and Regional Development.

The functions of the NPWVSCC are to:

- coordinate the activities of all agencies involved in the preparation for and conduct of NPW visits
- recommend approval of the Visit Operation Order for each visit of an NPW
- establish joint working groups to undertake specialised tasks
- provide advice, as requested, to the State Government and the FES Commissioner
- liaise with Commonwealth departments as required
- carry out such other functions as may be determined from time to time.

Contact details for members of the committee and relevant Commonwealth personnel will be detailed in the Visit Operation Order for each visit.

E2 Port Nuclear Safety Panel

A Port Nuclear Safety Panel is established with each NPW visit to oversee operations, comprising:

- Department of Fire and Emergency Services (Chair)
- Department of Health (Radiation Health)
- Fremantle Port Authority
- Royal Australian Navy
- Southern Ports
- WA Police Force
- Australian Federal Police.

The functions of this panel are to handle all the routine arrangements relating to the Port with respect to NPW visits. These include:

- maintaining a communication link between the NPW and DFES State Operations Centre;
- assisting with the preparation of the Visit Operation Order for each visit by an NPW;
- providing an officer to assist the OIC PAZ in evacuation if required, and
- carrying out such other functions as may be determined from time to time.

The Port Nuclear Safety Panel is required to meet, at the discretion of the Chair, prior to and following an NPW visit.

E3 Naval Nuclear Ship Safety Organisations (NNSSO)

Responsibility for the safety aspects of NPW visits as they affect the Commonwealth at Garden Island (HMAS *Stirling*) lies with the Royal Australian Navy.

Control is exercised through the Naval Nuclear Ship Safety Organisation (NNSSO), which is responsible for the HMAS *Stirling* NPW Visit Port Safety Plan and implementation in an emergency.

The NNSSO is placed on standby for NPW visits to HMAS *Stirling*.

E4 Albany Community Nuclear Powered Warship Visits Committee (ACNPWVC)

This Committee has been formed to prepare, plan and to coordinate the procedures necessary to deal with an emergency visit of an NPW to Albany at the King George Sound anchorage.

The ACNPWVC comprises:

- DFES, Superintendent Great Southern Region (Chair)
- DFES, District Emergency Management Advisor Great Southern Region
- WA Police Force, Counter Terrorism and Emergency Response Command
- WA Police Force, Water Police
- City of Albany
- Southern Ports Authority, Harbour Master
- Department of Transport, Maritime Division Albany
- Department of Health, Albany Health Campus
- Department of Health, Radiation Health
- Royal Australian Navy.

Liaison is established with other Commonwealth and State authorities involved in the visits of NPWs to Australian Ports and these authorities include:

- Visiting Ships Panel (Nuclear)
- Australian Nuclear Science and Technology Organisation (ANSTO)
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
- Bureau of Meteorology
- Commonwealth Department of Health
- Commonwealth Department of Infrastructure and Regional Development
- National Emergency Management Agency (NEMA)
- Australian Defence Force (JOSS)
- Ships Husbanding Agent.

And with the following DFES Business Units:

- State Operations Centre
- COMCEN

The functions of the ACNPWVC are to:

- coordinate the activities of all agencies involved in the preparation for and conduct of emergency NPW visits;
- provide advice, as requested to the District Emergency Management Committee (DEMC), the FES Commissioner and State Government;
- liaise with State and Commonwealth departments as required;
- carry out such other functions as may be determined from time to time.

Appendix F: Further Details of Potential Radiation Hazards

Gamma radiation from vessel

Gamma radiation will be emitted from the hull of the nuclear powered warship following a Reactor Accident and a severe hazard may exist in the close vicinity of the reactor compartment. In the case of NIMITZ class aircraft carriers this hazard could extend up to several hundred metres. However, the intensity of gamma radiation is rapidly reduced by distance from the vessel.

Gamma radiation from plume and ground deposition

The fission products, which escape to the atmosphere will form a radioactive plume or cloud which would be a source of gamma radiation. In addition, radioactive particulate material from the cloud may deposit on the ground forming another source. These sources can be detected and measured using radiation dose rate instruments.

Inhalation of fission products

A health risk would be associated with the inhalation of fission products by people in the path of the plume. Radioactive iodine, which would be the dominant hazard, is rapidly absorbed by the body and is concentrated by the thyroid gland. Irradiation of thyroid tissue increases the risk of thyroid cancer. Air sampling using an iodine absorbing charcoal cartridge can be used to indicate the presence of radioiodine. The radiation dose to the thyroid of persons exposed to radioactive iodine can be reduced significantly if non-radioactive (stable) iodine in the form of potassium iodate tablets, are taken as a blocking agent. If the airborne concentration of radioactivity is significant, the affected population will need to be instructed to shelter indoors with closed doors and windows, or evacuated.

Ingestion of fission products from contaminated food and water

Radioiodines and other volatile fission products would be deposited on the ground and on water supplies over which the radioactive plume passes. In market garden areas these contaminants may deposit on leafy vegetables or other foodstuffs and lead to an ingestion hazard. Environmental samples will need to be analysed and, if necessary, controls on these foodstuffs implemented to prevent or minimise exposure to the affected population.

Ingestion of radioactive iodine in milk

Milk from cows grazing on contaminated areas, possibly extending several kilometres downwind could be hazardous, particularly to children, due to the cow's ability to concentrate iodine in its milk. However, contaminated milk would not appear for a day or so, and time would be available for detection and control.

Accidents more serious than the Reference Accident

Accidents with more serious consequences than the Reference Accident are conceivable and could result from:

- a catastrophic failure of the reactor pressure vessel causing a co-incidental breach of the containment; or
- a high speed collision resulting in both the containment and the primary circuit being breached.

The first event is estimated to have a probability of the order of one in ten million per pressure vessel per year.

A high speed collision of sufficient energy to rupture both the containment and the reactor primary coolant system is prevented by navigational controls within Australian harbours and their approaches. With regard to low speed collisions, warships are built to be structurally robust as protection against battle damage and the energy at impact from a low speed collision would not be expected to cause the consequences described above.

Appendix G: Phases of Evacuation

Phase 1 – Precautionary Action Zone (PAZ) Evacuation and Urgent Protective Action Planning Zone (UPZ) Evacuation Preparation

The OIC PAZ, assisted by AFP, Water Police vessels and RAN vessels as required, evacuate all civilians from the PAZ. Instruct water-borne patrol units to direct all craft within the PAZ to a specified decontamination area. Thereafter prevent the intrusion of all such craft into the waters within the PAZ and the UPZ.

Phase 2 – Urgent Protective Action Planning Zone Evacuation

Initiate Emergency Alert (telephone warning system) call out to affected area, supported by Police vehicles utilising public announcement systems, directing people within the affected area to exit via the decontamination and stable iodine distribution point identified in the Visit Operation Order for the visit. Instruct water borne patrol units to direct all craft within the UPZ to a specified decontamination area.

Phase 3 – All Clear Precautionary Action Zone and Urgent Protective Action Planning Zone

This includes the notification of all evacuated persons of the all clear. There is also a requirement to return vessels and personal possessions, and to return the waters of the PAZ and the UPZ to normal traffic.

Transport of evacuees from the evacuated area will utilise private vehicles, emergency service vehicles and other vehicles as necessary.