Government of **Western Australia**
State Emergency Management Committee

STATE HAZARD PLAN

HAZMAT Annex A

Radiation Escape from Nuclear Powered Warship (NPW)

Note: This document contains information relating to the arrangements for managing emergencies resulting from the hazard of radiation escape from a nuclear powered warship. It must be read in conjunction with the State Emergency Management Plan, which contains the generic emergency management arrangements, and State Hazard Plan - Hazardous Materials Emergencies (HAZMAT).

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Legislation

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AMENDMENT TABLE

Amendment		Details	Amended by:
#	Date		
1	April 2002	Complete re-issue.	McCUTCHEON 8602
2	Dec 2003	Reprint	McCUTCHEON 8602
3	Dec 2006	Complete re-issue	SCOTT 9667
4	Oct 2007	Contact Amendment	SADLIER 6124
5	June 2008	Complete re-issue	SADLIER 6124
6	July 2009	Contact Amendment	SADLIER 6124
7	December 2010	Complete re-issue as strategic document in accordance with other Westplans	TF 87406
8	December 2015	Scheduled Review	TF 87406

9	May 2016	Statement of fact amendments	SEMC Secretariat
10	August 2018	New format and attached to State Hazard Plan – HAZMAT as an annex, statement of fact changes, removal of duplication with the State Emergency Management (EM) Plan, inclusion of capability baseline and assurance activities, machinery of Government changes, other changes as relevant to the annex.	WA Police Force
11	December 2018	Version 01.01 –Amendments approved by SEMC (Resolution Number 90/2018) as per State EM documents amendments table v02.00.	SEMC Business Unit
12	May 2019	Version 01.02 – Minor amendments approved by SEMC (Resolution Number 41/2019) as per State EM documents amendments table v02.01.	SEMC Business Unit
13	October 2019	Version 01.03 – Minor amendments approved by SEMC (Resolution Number 91/2019) as per State EM documents amendments table v.02.02.	SEMC Business Unit

This State Hazard Plan is available on the State Emergency Management Committee internet site www.semc.wa.gov.au.

CONTENTS

1 INTRODUCTION

This Annex A, Radiation Escape from Nuclear Powered Warship (the Annex) provides an overview of arrangements for the management of nuclear powered warship (NPW) emergencies in Western Australia, in accordance with criteria laid down by the Commonwealth Government. It contains information on prevention, preparedness, response and initial recovery from the radiation effects of a nuclear powered warship (NPW) reactor accident.

The objectives of the Annex are:

1) To provide a standard structure for operational planning regarding visits of NPWs to ports within Western Australia, and the arrangements for activities by Commonwealth and State authorities during the visit of NPWs to ports within Western Australia and their environs (primarily the Port of Fremantle and Cockburn Sound) with 'stop and go' emergency arrangements for King George's Sound, Albany.
2) To detail the agreed roles and responsibilities of emergency management agencies in the event of a defined reactor accident, known as the *Reference Accident* (see Appendix B).

The Commissioner of Police is the Hazard Management Agency (HMA) for NPW emergencies.

1.1 SCOPE

This annex covers accidents of severity up to and including the *Reference Accident* for Naval nuclear reactors primarily in the Port of Fremantle and Cockburn Sound and King George's Sound, Albany, and is for the use of emergency personnel and to inform the public.

This annex contains UNCLASSIFIED material. Specific information of a higher classification is contained in the State NPW Visits Operational Plan, which is restricted to organisations with roles and responsibilities within it.

The response concepts underlying this plan have application to a more severe accident (see Appendix E) using the principles of graduated approach it sets out.

1.2 HAZARD DEFINITION

This annex relates to the prescribed hazard of radiation escape from a 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.

The reactor core in NPWs is so designed that it is physically impossible for it to explode. The only mechanism whereby a significant fraction of the fission products could be released from the fuel is an accident in which the fuel melts. 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, as some of the fission products will be volatile and/or gaseous, it is possible that a slow leakage could occur to atmosphere where they would be dispersed according to the current weather pattern.

A full core meltdown accident of this type, assuming pessimistic containment leak rate and poor atmospheric dispersion conditions, has been used as a *Reference Accident* to provide a basis for the assessment of the suitability of Australian ports for use by NPWs and also for developing port safety plans. The probability that such an accident would occur during a four or five day, visit to port has been estimated to be less than one in a million per reactor per year.

Following a reference accident involving fuel melting, hazards could result from:

- 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 hazards are set out in Appendix D.

1.3 ORGANISATIONAL ROLES AND RESPONSIBILITIES

The State Government, through the Commissioner of Police (as Hazard Management Agency for NPW emergencies), is responsible for ensuring that all actions and services necessary to safeguard the public in the event of a reference accident to a visiting nuclear powered warship are catered for.

Key agencies with responsibilities under this annex, in additional to the Western Australia Police Force (WA Police Force), include:

- Australian Defence Force, Joint Operations Support Staff (JOSS)
- Australian Nuclear Science and Technology Organisation (ANSTO)
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)
- Bureau of Meteorology
- Department of Fire and Emergency Services (DFES)
- Department of Health
- Department of Home Affairs, Emergency Management Australia
- Fremantle Port Authority
- Royal Australian Air Force
- Royal Australian Navy.

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

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

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

- Nuclear Powered Warship Visiting Ships (Coordinating) Committee (NPW VS(C)C)
- 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 are available in Appendix C.

The annex is prepared in consultation with the Department of Defence, Visiting Ships Panel (Nuclear) and the Western Australia Nuclear Powered Warships Visiting Ships (Coordinating) Committees (NPW VS(C)C).

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 by Nuclear Powered Warships to Australian Ports* (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 annex is to be read in conjunction with the following documents:

- Department of Defence publication *"Visits by Nuclear Powered Warships to Australian Ports"* (OPSMAN 1).
- Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Technical Report Series No: 131 *"Medical Management of Individuals Involved in Radiation Accidents.'*
- ARPANSA The 2000 Reference Accident Used to Assess the Suitability of Australian Ports for Visits by Nuclear Powered Warships, December 2000
- State NPW Visits Operational Plan (WA Police Force)
- Visit Operation Orders, prepared for each visit of a NPW and details specific multi-agency operational and administrative procedures applicable to the visit (WA Police Force)
- State Potassium Iodide Distribution Plan (Department of Health, Radiation Health Branch)

1.5 ACTIVITIES INFORMING THE ASSURANCE PROCESS

Advisory roles within the WA Police Force specialist business areas (Water Police, Emergency Operations and Emergency Preparedness) support response planning based on established triggers within the agency for their engagement.

Aspects of emergency planning which are legislated are incorporated in the WA Police Force's Good Governance audit, e.g. maintenance of State and local hazard plans, with policy statements in the Police Manual also subject to regular review. The State Emergency Management Committee (SEMC) oversees compliance of plans within the State EM arrangements, e.g. State Hazard Plan reviews and exercises.

Because of 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).

2 PREVENTION AND MITIGATION

2.1 RESPONSIBILITY FOR PREVENTION AND/OR MITIGATION

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 by Nuclear Powered Warships to Australian Ports* (OPSMAN 1). Reference should also be made to ARPANSA Technical Report Series No: 131 *Medical Management of Individuals Involved in Radiation Accidents*.

Visits by NPWs will only be permitted to **Approved Berths and Anchorages**, evaluated by the Commonwealth Government 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 subject to a radiation hazard requiring countermeasures.

2.2 PREVENTION AND/OR 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 during visits.

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

Safety/security arrangements for the base at HMAS Stirling are the responsibility of the Royal Australian Navy.

3 PREPAREDNESS

3.1 RESPONSIBILITY FOR PREPAREDNESS

The Commissioner of Police, as the Hazard Management Agency (HMA), has overall responsibility for State preparedness in relation to visits by NPW within Western Australia. In order to ensure that this responsibility is met, the WA Police Force preparedness activities focus on essential emergency management capabilities through the development of plans, procedures, organisation, management of resources and training. This includes:

- Preparation of Annex A – NPW on behalf of the SEMC;
- Activating and managing the annex as required.

3.2 CAPABILITY BASELINE

The OPSMAN 1 Reference Accident (see appendix B), used to provide a basis for the assessment of the suitability of Australian ports for use by NPWs and also for developing port safety plans is also the capability baseline used for this annex, for consistency across jurisdictions.

3.3 PLANNING AND ARRANGEMENTS

This annex 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.

3.3.1 Protective Zoning

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

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

An **Urgent Protective Action Zone** will be determined for all anchorages specifying an appropriate circle of radius centred on the NPW for any 30 degree downwind sector.

A **Long Term Protective Action Zone** will be defined for an area within which a surrounding population may be subject to hazards associated with long term exposure to ground deposited radioactive material (groundshine) and/or ingestion of contaminated water, foodstuffs, milk and agricultural produce.

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

3.3.2 Radiation Monitoring

The **Radiation Monitoring Group** (established in Fremantle and Cockburn Sound) will comprise:

- LMRG, provided by the Commonwealth, responsible for coordination of all radiation monitoring functions;
- Technician radiation Monitoring Group provided by Royal Australian Navy;
- Continuous radiation monitoring post manned by Royal Australian Navy (RAN) or Royal Australian Navy Reserve (RANR) personnel for the purpose of providing early warning of a reference accident;
- Minimum 2 Mobile Monitoring Units comprising of a Health Physicist from the Department of Health's Radiation Health Section and a driver designated by 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 a NPW, **Routine Monitoring Procedures** will be carried out in accordance with OPSMAN 1 and are set out in the State NPW Visits Operational Plan.

Emergency Radiation Monitoring Procedures will be initiated on confirmation of a reference accident. Advice of a reference accident will arise from:

- Notification by the NPW Commanding Officer, or his representative;
- A significant increase in the gamma radiation levels measured by the continuously operating monitoring post.

Emergency radiation monitoring procedures for King George Sound, Albany will be initiated on confirmation of a reference accident arising from notification by the NPW Commanding Officer, or representative. The State Radiation Officer (SRO) will determine the monitoring locations.

3.3.3 Additional Planned Emergency Countermeasures

Removal of the NPW

A Commonwealth condition of entry for a visit by a 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 remove the NPW will rest with the Police Commander with incident control on advice from the SRO who will, if necessary, recommend removal of the vessel from the anchorage 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 a NPW following a reference accident.

3.3.4 Protective Countermeasures

All Anchorages

The location of all anchorages is such that the Precautionary Action Zone and Urgent Protective Action Zone 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.

Evacuation is expected to be restricted to the Precautionary Action Zone and Urgent Protective Action Zone, which would mainly consist of people participating in boating activities.

Decontamination

Persons classed as being potentially contaminated will be:

- Civilians evacuated from the NPW following a confirmed alarm.
- Civilians evacuated from the Precautionary Action Zone and Urgent Protective Action Zone.
- RMGs and other emergency personnel operating in the down wind sector.

DFES will conduct decontamination of casualties. The decontamination location will be established dependent on the prevailing conditions in consultation with and at the direction of the IC.

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 NPW Visits Operational Plan.

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 NPW Visits Operational Plan.

Reference should also be made to ARPANSA Technical Report Series No: 131 Medical Management of Individuals Involved in Radiation Accident.

3.4 COMMUNITY INFORMATION AND EDUCATION

There will be a joint effort by the WA Police Force, Radiation Health and relevant Local Governments to develop awareness, when appropriate, for hazards identified relating to NPW and establish the profile of any community at risk. As required, the public is to be informed of the hazards, probabilities, emergency management plans at all levels, warning and response arrangements and any actions which may be expected of them.

3.5 COMMUNITY EVACUATION

Emergency procedures that will be required in response to a reference accident are similar for all classes of nuclear powered warships. 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 Police Commander with incident control of the protective measures that need to be implemented, including possible initial shelter-in-place and evacuation.

Should community evacuation be necessary, it will be carried out in consultation with the Department of Communities, as appropriate, in accordance with;

- State EM Policy Section 5.7;
- State EM Plan Section 5.3;
- State EM Response Procedures 8 and 17;
- SEMC Western Australian Community Evacuation in Emergencies Guidelines; and
- Local evacuation plans.

3.6 LOCAL AND DISTRICT HAZARD EMERGENCY MANAGEMENT PLANS

The inclusion of arrangements for visits by NPW as a specific hazard is only appropriate for Emergency Management Districts which have an approved berth within their boundaries.

3.7 ASSISTANCE ARRANGEMENTS WITH OTHER JURISDICTIONS

3.7.1 Commonwealth Government assistance

The provision of Commonwealth Government physical assistance is dependent upon established criteria and requesting arrangements. All requests for Commonwealth physical 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 20.

3.7.2 Assistance from Overseas

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

4 RESPONSE

4.1 RESPONSIBILITY FOR RESPONSE

In an emergency resulting from a reference accident, overall control of the response to the emergency is the responsibility of the Commissioner of Police (as the Hazard Management Agency), who is accountable to Government for the mitigation of the emergency.

Given the nature of the hazard, it is likely that overall control of a NPW emergency will be at State level on notification. Response at the incident site, once known, will follow the principle of a graduated approach.

The State Radiation Officer (SRO), assisted by the Leader Radiation Monitoring Group (LRMG), is responsible for provision of advice to the Commissioner of Police on the necessary steps to counteract or minimise the effects of radiation on emergency service personnel and members of the public.

The Commissioner may delegate control of the emergency response.

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.

Officer in Charge (OIC) Precautionary Action Zone

The OIC of the Precautionary Action Zone will be a senior officer of the WA Police Force appointed by the Police Commander with incident control, other than for vessels berthed at HMAS Stirling, where the OIC of the Precautionary Action Zone will be a Naval Officer appointed by the Officer Commanding HMAS Stirling.

Security of the Precautionary Action Zone

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

4.2 RESPONSE ARRANGEMENTS

The response aspects of this annex are automatically activated upon advice of a visit of a NPW to any port within Western Australia.

4.2.1 Preliminary Action

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

- Establish and maintain a radio communication link between the NPW, the Water Police Coordination Centre, the Police Operations Centre and specified personnel;
- Discuss the Visit Operation Order for the visit (prepared by the WA Police Force); and
- Facilitate all routine arrangements relating to the Port with respect to NPW visits.

The NPW VS(C)C will liaise with the Port Nuclear Safety Panel and meet as required to ensure that:

- A Visit Operation Order for the visit applicable to 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; and
- A pre–visit exercise is conducted.

4.2.2 Stages of Activation

The following stages of activation are applicable to the annex:

- Stage 1 – Commences when a visit is confirmed and is to take place within 28 days and will continue until the NPW has entered port limits;
- Stage 2 – While the NPW is inside port limits;
- Stage 3 – Commences when the NPW clears port limits;
- Stage 4 – Commences when an alarm is advised by the continuous monitoring system or the Commanding Officer or Delegated Officer of the NPW;
- Stage 5 – Commences when the NPW clears port limits because of the occurrence of a reference accident and upon completion of stage 4.

Stages 1 – 3 are routine stages that will occur for any visit, with stages 4 and 5 referring to situations occurring that with require emergency actions.

Stage 4 establishes actions to be taken in response to a confirmed reference accident. In such as event, back–up facilities will be requested from Commonwealth authorities in which resources will initially be provided by ANTSO in conjunction with ARPANSA. There will also be cooperation with the NPWs national authorities.

Stage 4 identifies those urgent response actions in the event of a radioactive plume is being released.

Stage 5 covers longer term actions such as radiation and contamination surveys and remedial activities. These activities will require continued Commonwealth support.

Further information on actions during each stage is set out in the State NPW Visit Operational Plan.

Note: In the event that no reference accident occurs, the visit will progress through stages 1, 2 and 3 only.

4.3 NOTIFICATIONS

Notification to implement emergency procedures in response to a nuclear reference accident will arise from the following circumstances:

- The continuous radiation monitoring system indicates a radiation alarm, or
- The NPW advises an alarm.

Emergency procedures required are similar for all classes of nuclear powered warships. The evacuation plan set out in the State NPW Visits Operational Plan will be implemented by the WA Police Force on the advice of the SRO.

4.4 LEVELS OF RESPONSE

4.4.1 Actions on Initial Alarm

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

For the Port of Fremantle and Cockburn Sound, this includes actions for the Police Operations Centre, SRO, LRMG, Continuous Radiation Monitoring Vessel and land based Mobile Monitoring Units.

For King George Sound, Albany, this includes actions for the WA Police Force Shift Supervisor in Albany and the SRO.

4.4.2 Confirmed Alarm

Further actions to be carried out on confirmation of an alarm (by either the NPW or Continuous Monitoring Post) are set out in the State NPW Visits Operational Plan.

For the Port of Fremantle and Cockburn Sound, this includes actions for the Police Operations Centre, Police Commander with incident control and Police Media Liaison Officer, the SRO, LRMG, Continuous Radiation Monitoring Vessel and land based Mobile Monitoring Units, the Harbour Master (Fremantle Port Authority) and the Royal Australian Navy (HMAS Stirling).

For King George Sound, Albany, this includes actions for the WA Police Force Shift Supervisor in Albany, Water Police and Media Liaison Officer, the SRO, the Harbour Master (Southern Ports Authority) and the Royal Australian Navy.

4.4.3 Radiation Reports

Radiation reports are to be compiled in accordance with the procedures detailed in the Radiation Monitoring Handbook.

Radiation reports are communicated by the dedicated police radio network, mobile telephone or WebEOC to the ICC.

4.4.4 Advice to Civilians in Areas Affected by a Radioactive Plume

Advice to members of the public will be coordinated by the WA Police Force Media Liaison Officer in accordance with the State NPW Visits Operational Plan. 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.

4.4.5 Radiation Monitoring of Emergency Service Personnel

Police 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.

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.

4.4.6 Hazard Management Officers

All police officers carrying out emergency management duties in the area of, or otherwise involved in responding to any Emergency Situation declared by the Commissioner of Police (i.e. for all hazards where the Commissioner is the HMA) have been authorised to act as Hazard Management Officers (HMOs). In

addition, any employee of the Police Service tasked with an operational support role and who is carrying out emergency management duties in response to the emergency situation also has a standing delegation to act as a HMO.

Further police employees or other persons may be authorised by the Commissioner to act as HMOs during an Emergency Situation declared by the Commissioner for a radiation escape from a NPW emergency.

HMOs may exercise a power under part 6 of the *Emergency Management Act 2005* subject to the terms and conditions on which they have been authorised.

4.4.7 Authorised Officers

All police officers carrying out emergency management duties in the area of, or otherwise involved in responding to, any State of Emergency declared by the Minister have been authorised to act as Authorised Officers by the Commissioner of Police in his capacity as State Emergency Coordinator. In addition, any employee of the Police Service tasked with an operational support role and who is carrying out emergency management duties in response to the state of emergency also has a standing delegation to act as an Authorised Officer.

Other persons may be authorised by the State Emergency Coordinator to act as Authorised Officers during a State of Emergency declared by the Minister for a radiation escape from a NPW emergency.

Authorised Officers may exercise a power under part 6 of the *Emergency Management Act 2005* subject to the terms and conditions on which they have been authorised.

4.5 PUBLIC WARNINGS/INFORMATION

The WA Police Force, as the Controlling Agency, is responsible for the provision of media management and public information. Participating organisations and support agencies should only release information which specifically relates to the functions of that organisation.

The WA Police Force at all times retains the responsibility for the control of the release of information regarding victim identities.

The broadcasting of information must be appropriate for the severity and timing of the predicted emergency.

4.6 EVACUATION ARRANGEMENTS DURING RESPONSE

The evacuation plan is set out in the State NPW Visits Operational Plan. Evacuation procedures will be activated by the Police Commander with incident control on the advice of the SRO. The evacuation of the Precautionary Action Zone is to be automatically initiated on confirmation of a radiation alarm. A decision to evacuate the Urgent Protective Action Zone will be based on radiation data obtained from the mobile monitoring teams and assessed by the SRO and LRMG.

In the event of a reference accident the first and most important response is for the vessel to depart as per the conditions of entry.

The evacuation areas (Precautionary Action Zone and Urgent Protective Action Zone) are set out in the Visit Operation Order and are determined by a defined circle of radius around the NPW, to include a wider radius for the downwind sector. The number of persons within the Precautionary Action Zone and the Urgent Protective Action Zone would be determined by factors such as

time of day, day of the week, public holidays, boating conditions and seasonal factors.

The evacuation requirement is divided into three phases, details of which are set out in Appendix F.

4.6.1 Decontamination of Evacuees

Potentially contaminated persons will be checked, decontaminated, if necessary and their details recorded before being allowed to leave.

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 as some later stage.

4.6.2 Security

The WA Police Force is responsible for security arrangements for the evacuated area, to minimise risk to life and property. This will require the exclusion of unauthorised personnel from entering the evacuated area. These arrangements also extend to provision of security for vessels and personal property removed for decontamination.

4.6.3 Evacuation Centres

Evacuation centres will be established as required to handle displaced persons. Where practicable, Welfare Centres identified in Local Emergency Management Arrangements will be utilised as required in consultation with the Department of Communities in accordance with State EM Plan Section 5.5.4 and Local Emergency Management Arrangements.

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 TERRORISM

Should the Commissioner of Police believe that a radiation escape from a NPW emergency is the result of a terrorist act the response arrangements under State Hazard Plan– Terrorist Act will be activated, and in accordance with the National Counter Terrorism Arrangements, further actions undertaken as required under national and state policies and plans.

4.8 FINANCIAL 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 2.

Assistance provided under Annex A – NPW is funded from agency/departmental budgets. Where these resources are inadequate, either because of insufficient funds or a lack of a suitable appropriate item on which to call, no financial commitments can be entered into or expenditure incurred unless authorised by the Assistant Commissioner Specialist and Support Services (or delegated authority via the State Operations Command Centre for ‘out of hours’, short notice incidents). Agencies and Departments are requested to maintain a record of all costs incurred in providing assistance.

5 RECOVERY

Recovery is the coordinated process of supporting emergency affected communities in the reconstruction and restoration of physical infrastructure, the environment and community, psychosocial, and economic wellbeing.

5.1 LOCAL GOVERNMENT

Under the Emergency Management Act 2005, it is a function of local government to manage recovery following an emergency affecting the community within its boundary.

The extent of recovery activity will, however, depend on the nature and magnitude of the emergency. In some circumstances, it may be necessary for the State Government to assume responsibility for coordinating the recovery process at a whole-of-government level.

5.2 THE WA POLICE FORCE

The WA Police Force, as the Controlling Agency for a radiation escape from a NPW emergency, must initiate recovery activity during the response to that emergency. The WA Police Force is to:

- ensure timely notification of the emergency, liaison and appropriate inclusion of those with recovery responsibilities in the incident management arrangements;
- ensure that in combating the effects of the emergency, activities have regard for the need to facilitate recovery;
- coordinate completion of the Impact Statement prior to the transfer of responsibility for management of recovery to the affected local government(s); and
- other responsibilities described in State EM Plan section 6.4.

APPENDIX A DISTRIBUTION LIST

This Annex for NPW is available on the SEMC website (www.semc.wa.gov.au). The agencies below will be notified by the HMA (unless otherwise specified) when an updated version is published on this website.

- All agencies and organisations with responsibilities under this annex, 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)
- Department of Home Affairs, Emergency Management Australia ccc@ag.gov.au
- Emergency Management Australia (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)
- State Emergency Management Committee (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 / ACRONYMS

Terminology used throughout this document has the meaning prescribed in section 3 of the *Emergency Management Act 2005* or as defined in the State Emergency Management Glossary. In addition, the following hazard-specific definitions apply.

B1 GLOSSARY OF TERMS

Action Zones — Zones designated around NPW berths and anchorages for planning purposes to assist in the identification of areas where hazards might arise.

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.

Cladding — The metal sheath within which the reactor fuel is sealed.

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.

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.

Reference accident — A reactor accident of severity up to and including the Reference Accident (e.g. core meltdown)

Dose (of radiation) — Radiation doses may be the absorbed dose, which is the average amount of energy deposited in a unit mass by ionising radiation (expressed as

	Grays), or the equivalent dose, in which the dose is multiplied by a weighting factor which accounts for the biological effectiveness of the radiation in causing damage (expressed as Sieverts).
Downwind Sector	Normally refers to the 15 degrees angle either side of the prevailing wind direction downwind of the accident site.
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.
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	A radiation specialist from ANSTO in location during every visit of NPW, to lead the Radiation Monitoring Group
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.
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
Plume	The trail of airborne contamination carried by the wind from a radiation accident, fire etc.
Precautionary Action Zone	A circle of radius 600 metres centred on the NPW (other than for a berth for a NIMITZ class aircraft carrier which requires 800 metres) requiring automatic evacuation on confirmation of a reference 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).
Reference Accident	A failure of the primary coolant circuit of one of the reactors resulting in a loss of coolant and melt down of the fuel in the reactor core and a release of volatile and gaseous fission products into the reactor containment. These fission products may then leak into the atmosphere and be distributed according to the current weather. In the assessment the dispersion of released fission products in the atmosphere downwind of the accident has been estimated using a standard, conservative meteorological model and the radiation doses to individuals and to the total population have been calculated.
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.
Stop and Go	Stop and go NPW visits are visits of less than two hours duration (e.g. for medical emergencies and boat transfers). King George's 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 Protection Zone	Any 30 degree downwind sector within a circle of radius 2.8 km centred around the NPW (other than for a berth for a NIMITZ class of aircraft carrier which requires 3.7 km) which may require evacuation.

B2 ACRONYMS

ACNPWVC	Albany Community Nuclear Powered Warships Visits Committee
ANSTO	Australian Nuclear Science and Technology Organisation
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
CTA	Commonwealth Technical Adviser
EMA	Emergency Management Australia
EOU	Emergency Operations Unit
LRMG	Leader Radiation Monitoring Group.
NNSSO	Naval Nuclear Ship Safety Organisation
NPW	Nuclear Powered Warship
NPW VS(C)C	Nuclear Powered Warships Visiting Ships (Coordinating) Committee
OIC	Officer-in-Charge
POC	Police Operations Centre
RAN	Royal Australian Navy, including Reserve
RMG	Radiation Monitoring Group
SRO	State Radiation Officer
TLDs	Thermoluminescent Dosimeters
VHF	Very High Frequency (30-300 Megahertz)

APPENDIX C RESPONSE ROLES AND RESPONSIBILITIES

The WA Police Force has the primary role of coordinating the response to NPW emergencies.

The following are the response roles and responsibilities of agencies under this annex. Brief all-hazards information is also provided for agencies who may have a role under this annex – full details of these roles and responsibilities can be found in the State Emergency Management Plan, Appendix E.

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

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
Australian Defence Force, Joint Operations Support Staff (JOSS)	JOSS is responsible for: • Provision of liaison to the WA Police Force and State Government for the Department of Defence.
Australian Nuclear Science and Technology Organisation (ANSTO)	The ANSTO is responsible for: • Provision of the Leader, Radiation Monitoring Group; • Provision of a technician for the Radiation Monitoring Group where RAN assistance is not available; • Implementation of the routine monitoring program during visits (not including TLDs and marine sampling); • The emergency monitoring program with RAN and State assistance; • The provision, maintenance and calibration of radiation monitoring equipment; and • Contacting the Commonwealth Technical Adviser and arranging back up resources if required.
Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	The Australian Radiation Protection and Nuclear Safety Agency are responsible for: • Provision of technical advice on all aspects of nuclear reactor safety matters; • Provision of technical advice on nuclear reference accident modelling; • Assessment of the suitability of specific ports for visits by NPW against radiological criteria; • Provision of advice on radiation monitoring proposals;

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
	• Provision of TLDs, the assessment of radiation doses recorded by TLDs, and the issuing of assessment certificates and the radiochemical analysis of marine environmental samples and the issuing of analysis certificates; • Deployment of secondary back up resources upon request, and • Provision of a Commonwealth Technical Adviser (CTA) in liaison with ANSTO; and • The analysis of marine environmental samples.
Bureau of Meteorology	The Bureau of Meteorology are responsible for: • Provide the Police Commander with incident control 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 web site: http://reg.bom.gov.au/reguser/by_user/bomw0212/eou.tm • Provide observations and forecasts on an hourly basis, on request. • Provide additional information, such as evidence of inversion layers, temperature, humidity and winds at varying altitudes on request. It should be noted that ongoing updated real-time observational information of surface wind speed and direction for a number of locations in the general Perth Region can be accessed at the following web site: http://www.bom.gov.au/wa/observations/perth.shtml • the Regional Director Bureau of Meteorology Western Australia is to be invited as a member of the State Emergency Coordination Group (SECG) to provide appropriate briefings. • A Bureau of Meteorology officer may also be located in the Incident Control Centre (ICC) to provide updated weather briefings. It should be noted that the most appropriate technology and up-to-date data is located in the Regional Forecasting Centre (RFC). As such, it is highly desirable for weather briefings to be provided obtained from the Senior Duty Forecaster at the RFC.

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
	In cases where the information cannot be gained from the Internet, weather information will be conveyed to the ICC by alternate means, e.g. fax, telephone.
Department of Fire and Emergency Services (DFES)	The DFES is responsible for: • The decontamination of casualties and other actions in accordance with this State Hazard Plan – HAZMAT as required.
Department of Health	The Department of Health is responsible for: • Provision of advice on public health matters, and emergency medical services as required; • Distribution of prophylactic tablets and advice on dosage; and • Implementation of controls and restrictions of foodstuffs. In addition the Radiation Health Section is responsible for: • Provision of the State Radiation Officer; • Provision of two health physics surveyors for mobile monitoring units; • Distribution of thermoluminescent dosimeters (TLDs) prior to a visit, collection and forwarding of the TLDs to ARPANSA after the visit; and • Locations of TLDs (Visits Operation Order).
Department of Home Affairs, Emergency Management Australia	Emergency Management Australia is responsible for: • Managing the Australian Government Crisis Coordination Centre (CCC) that provides 24/7 all-hazards situational awareness; • Coordination of Commonwealth and jurisdictional capabilities to support jurisdictional response and recovery efforts, and • Alerting relevant Commonwealth authorities of a nuclear powered warship-related incident, through the CCC.

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
Fremantle Port Authority	The Fremantle Port Authority is responsible for: • Control of underway NPW in accordance with the Memorandum of Understanding between the Fremantle Port Authority and the Department of Defence; • Control of commercial vessels in the vicinity of a NPW; • Communication with the NPW during transit and whilst at Fremantle Port Authority anchorages (Commercial VHF only); • Surveillance of fixed monitoring equipment located in the Fremantle Port Authority Tower; and • Housing of stable iodine tablets.
Royal Australian Air Force	The Royal Australian Air Force is responsible for: • 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	The Royal Australian Navy is responsible for: • Safety/security arrangements for the base at HMAS Stirling • Establishment of the Naval Nuclear Ship Safety Organisation (NNSSO) during the visit; • The HMAS Stirling NPW Visit Port Safety Plan; • Provision of Officer in Charge for the Precautionary Action Zone, for visits to HMAS Stirling; • Provision of two drivers for State staffed Mobile Monitoring Units of the Radiation Monitoring Group; • Provision of a vessel for radiation monitoring of NPW at anchorages; • Provision of one qualified technician for the Radiation Monitoring Group; • Removal of an immobilised NPW from any berth or anchorage; • Provision of protective clothing for crews of towing vessels;

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
	• Collection of marine environmental samples and their forwarding to the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA); • Provision and staffing of the HMAS Stirling Emergency Operations Centre; • Arranging for Notices to Mariners and Airmen; and • Other functions as set out in the Department of Defence OPSMAN 1.
State Radiation Officer Department of Health	The State Radiation Officer is responsible for: • Ensuring that all State Radiation Monitoring facilities are operating; • Consulting with the Leader Radiation Monitoring Group (LRMG) on routine and emergency procedures; • Consulting with the LRMG on the pattern of field monitoring; • Provision of advice to the Police Commander with incident control regarding radiological risks and protective countermeasures; • Consulting with the State Health Coordinator on the distribution of iodine tablets; and • Reviewing the field radiation monitoring measurements and assisting in the interpretation.
WA Police Force	The WA Police Force is responsible for this Annex, the State NPW Visits Operational Plan, issue of a Visit Operation Order, all routine and emergency communications and operational requirements associated with NPW visits. Additionally, the WA Police Force is responsible for: • Staffing and equipment provision at the Incident Control Centre (likely to be the Maylands Incident Command Centre); • Management of any emergency response including dissemination of warnings, public announcements and advice to the public; • 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;

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
	• Facilitating protective measures as advised by the State Radiation Officer; • Control and direction of the Port Nuclear Safety Panel; • Overseeing communication facilities to support the Port Nuclear Safety Panel; • Providing advice to the State Emergency Coordination Group on the situation; and • Providing advice on the termination of any emergency. The WA Police Force is also responsible for • the security of the Precautionary Action Zone whilst the vessel is anchored and to • controlling vessel traffic in the vicinity of the NPW during transit and on request at other times. If an emergency occurs the WA Police Force is responsible for • 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; • Assisting where required to ensure that adequate arrangements are in place for the transportation of any injured; • Ensuring the orderly evacuation of any uninjured survivors to a safe and secure area where the designated welfare coordinator can assume responsibility for their management; • the exclusion of all civilians and non-essential personnel from the Precautionary Action Zone and the Urgent Protective Action Zone (see section 3.2.1), and for • the provision of additional vessels in support of radiation monitoring requirements. Specifically the State NPW Visits Operational Plan and/or Visit Operation Order will include: • Evacuation of all civilians from the NPW, the Precautionary Action Zone and the Urgent Protective Action Zone;

Organisation	Response Responsibilities (see State EM Plan Appendix E for full all-hazards roles and responsibilities)
	• 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; and • Crowd and traffic control arrangements.

APPENDIX D SUPPORTING COMMITTEES, PANELS AND ORGANISATIONS

D1 NUCLEAR POWERED WARSHIP VISITING SHIPS (COORDINATING) COMMITTEE (NPW VS(C)C)

This committee has been formed to prepare a plan and to coordinate the procedures necessary to deal with the visit of a NPW to the Port of Fremantle and Cockburn Sound. One of its primary roles is to assist with the preparation and maintenance of Annex A - NPW.

The NPW VS(C)C comprises:

- Commissioned Officer, Counter Terrorism and Emergency Response Command (CT & ER), WA Police Force (Chair)
- Water Police, WA Police Force, (Executive Officer)
- Radio and Electronic Support Unit, WA Police Force
- Security Intelligence Unit, WA Police Force
- Communications Division (Police Operations Centre; POC), WA Police Force;
- Department of Health (Radiation Health)
- Department of Fire & Emergency Services (DFES) (HAZMAT/CBRN)
- Royal Australian Navy
- Australian Defence Force (Joint Operations Support Staff (JOSS), WA)
- Fremantle Port Authority
- 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 Nuclear Science and Technology Organisation
- Australian Radiation Protection and Nuclear Safety Agency
- Department of Home Affairs, Emergency Management Australia
- Bureau of Meteorology
- Commonwealth Department of Health
- Commonwealth Department of Infrastructure and Regional Development

The functions of the NPW VS(C)C are to:

- Support the preparation, approval and maintenance of Annex A - NPW;
- 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 a NPW;
- Establish joint working groups to undertake specialised tasks;
- Provide advice, as requested, to the State Government and the Commissioner of Police;
- Liaise with Commonwealth departments as required; and
- 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.

D2 PORT NUCLEAR SAFETY PANEL

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

- Water Police, WA Police Force (Chair):
- Radio and Electronic Support Unit, WA Police Force;
- Fremantle Port Authority;
- Department of Health (Radiation Health);
- Royal Australian Navy;

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 NPWs, the Water Police Coordination Centre and the Police Operations Centre;
- Assisting with the preparation of the Visit Operation Order for each visit by a NPW;
- Providing an officer to assist the officer in charge of the Precautionary Action Zone 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 a NPW visit.

D3 NAVAL NUCLEAR SHIP SAFETY ORGANISATION (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 Sub-Plan and implementation in an emergency.

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

D4 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 a NPW to Albany at the King George Sound anchorage.

The ACNPWVC comprises:

- Superintendent Great Southern District, WA Police Force (Chair)
- Officer in Charge Albany Police Station, WA Police Force
- Commissioned Officer: CT & ER Command, WA Police Force
- Water Police, WA Police Force
- DFES - Superintendent Great Southern Region
- District Emergency Management Advisor Great Southern Region
- 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
- Australian Radiation Protection and Nuclear Safety Agency
- Bureau of Meteorology
- Commonwealth Department of Health
- Commonwealth Department of Infrastructure and Regional Development
- Department of Home Affairs - Emergency Management Australia

- Australian Defence Force (JOSS)
- Ships Husbanding Agent

And with the following WA Police Force Business Units:

- Radio and Electronic Support Unit
- State Security Investigation Group
- Water Police
- Police Operations Centre

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 Commissioner of Police 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 E 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 Reference 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 F PHASES OF EVACUATION

Phase 1 – Precautionary Action Zone Evacuation and Urgent Protective Action Zone Evacuation Preparation

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

Phase 2 – Urgent Protective Action 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 Urgent Protective Action Zone to a specified decontamination area.

Phase 3 – All Clear Precautionary Action Zone and Urgent Protective Action 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 Precautionary Action Zone and the Urgent Protective Action Zone to normal traffic.

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