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NUCLEAR MEDICINE MANUFACTURING PROGRAM

NMMF Emergency Management Plan

For Siting Licence

File Number: NMMP-0410-PM-0005

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1. Purpose

The purpose of this Emergency Management Plan is to describe the organisational arrangements in place to respond to and mitigate any incident occurring during the siting and development phase for a new Nuclear Medicine Manufacturing Facility (NMMF) at the ANSTO Lucas Heights campus.

This plan outlines the processes to ensure compliance with the relevant legislation, including the Australian Radiation Protection and Nuclear Safety (ARPANS) Act [Ref: (1)] and Regulations [Ref: (2)]. This plan is an integral element of the ARPANSA Siting Licence Application.

The arrangements outlined in this plan are consistent with international best practice, a defence in depth strategy and in accordance with International Atomic Energy Agency (IAEA) and ARPANSA guidelines. The plan has been prepared for the safe management of the facility during any incident.

This plan should be read in conjunction with the NMMF Safety Analysis Report (SAR) [Ref: (3)] and Plans and Arrangements supporting the Siting Licence Application.

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Please note for clarity, NMMF refers to the Nuclear Medicine Manufacturing Facility, i.e., the physical structure. NMMP is the Nuclear Medicine Manufacturing Program which includes the NMMF, and the Program of works required to deliver the NMMF.

2. Scope

The scope of this document covers the emergency considerations in accordance with the Australian Radiation Protection and Nuclear Safety (ARPANS) Act [Ref: (1)] and Regulations [Ref: (2)] and ANSTO safety arrangements for any incident requiring a response to ensure the protection of all persons on site, the public, and the environment.

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This plan is based on and subservient to the ANSTO Emergency Management Plan (ANSTO EM Plan) documented in AG-5945 ANSTO Emergency Management Plan [Ref: (4)]. The ANSTO EM Plan outlines the principles of how ANSTO will manage and control incidents and emergency situations (as defined in AG5945) and how information will be disseminated to the community and external emergency services.

This plan should be read in conjunction with the other plans and supporting documents comprising the Siting Licence Application, specifically the Safety Management Plan NMMP-0410-PM-0002 [Ref: (5)], NMMF Safety and Security Consequence Analysis NMMP-0410-RT-0003 [Ref: (6)], and the NMMF Security Plan NMMP-0410-PM-0008 [Ref: (7)].

3. Emergency Categorisation

The NMMF Program team engaged the ANSTO Systems Safety and Reliability (SSR) team to prepare a Safety and Security Consequence Analysis for the Bounding Case Release from the NMMF. The Safety and Security Consequence Analysis [Ref: (6)] identified the postulated bounding case accidents as:

- Building fire
- Seismic event
- Security event.

The most significant bounding case accident would be a large-scale building fire, with the potential to result in an airborne release of all the available radioactive materials stored in the facility. This postulated accident could impact on nearby communities and the environment. Details of the inventory and release fractions are listed in the report [Ref: (6)].

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Based on the Safety and Security Consequence Analysis [Ref: (6)] and the ARPANSA Guide for Radiation Protection in Emergency Exposure Situations – The Framework Radiation Protection Series G-3 Part 1 [Ref: (8)], an operational NMMF Emergency Preparedness Categorisation, technical note NMMP-0410-PM-0009 [Ref: (9)] was prepared. Considering the most restrictive group (infant daytime, inhalation) with a projected thyroid equivalent dose for 50-years exceeding generic criteria within approximately 1.3 km of the NMMF development site. Such a release would go beyond the Lucas Heights site boundary and could give rise to exposures to people off-site which may warrant urgent protective actions or early protective actions in an emergency response. As such, the assessed hazard due to the NMMF would be categorised as an Emergency Preparedness Category II. The ANSTO Emergency Plan (EM) [Ref: (4)] and this plan incorporate response actions to achieve the community and organisational goals of emergency response in accordance with international standards.

4. Responsibilities

The ANSTO EM Plan [Ref: (4)] also defines the roles and responsibilities of nominated ANSTO personnel supporting a multi-agency response to on-site emergencies and in the provision of specialist advice, technical and practical assistance, and resources to assist NSW Emergency Services Organisation's response to emergencies with off-site consequences.

The roles and responsibilities for the management of emergencies at the ANSTO Lucas Heights campus are summarised in Table 1.

Role	Responsibility
Chief Executive Officer (CEO)	Appointed by the ANSTO board to control and direct all activities of ANSTO and to ensure that adequate incident response measures are in place. They are the primary ANSTO spokesperson.
Group Executive Nuclear Safety Security and Stewardship (GE NSSS)	Has the overall responsibility for ensuring safety and security arrangements and operations are in place, including the appropriate emergency response arrangements. Also responsible for ensuring business resilience and emergency management arrangements are in place. The GE NSSS will advise the Risk and Compliance Committee and Crisis Management Team.
Group Executive, ANSTO Maintenance and Engineering and Chief Engineer (GE AME)	Holds the position of ANSTO Landlord and is responsible for the physical condition of all ANSTO facilities.
Consequence Assessment Team (CAT)	Assesses at an executive level and makes decisions on how an incident should be managed. CAT members are ANSTO Group Executives certified in the Australasian Inter-Service Incident Management System (AIIMS).
Critical Incident Management Team	Has the authority to make decisions as delegated by the CEO, responsible for providing the organisation with the response and recovery strategy and resources to manage all aspects of any crisis. See AG-5610 Critical Incident Management Plan [Ref: (10)].
Emergency Operations Manager (EOM)	Responsible for the management, coordination, preparation, and resourcing for all ANSTO related emergencies across all stakeholder groups. The EOM supports the Incident Controller (IC) and will maintain coordination of the incident, liaising with external services should a multi-agency incident take place.

Role	Responsibility
Radiological Emergency Manager	Responsible for the management, coordination, preparation, and resourcing for all ANSTO related radiological emergencies across all stakeholder groups. They work closely with the EOM and the ANSTO Radiation Safety Officer.
Emergency Response Team (ERT)	Reports to the EOM and provides 24/7 coverage at the Lucas Heights campus for all incidents and response to alarm activations. Responsibilities include: • Immediate alarm response, assessment, and escalation. • Engage immediate life-saving, search and rescue, and/or recovery actions in a safe manner. • Establish controlled access zones for potentially hazardous situations.
ANSTO Security Operations Centre (ASOC)	Is a 24/7 monitoring centre which monitors alarms for building environments, safety and security. The centre is staffed by trained operators. When requested by ANSTO Emergency Response personnel, they are responsible for alerting external emergency services to assist with ANSTO emergencies as required.
Incident Controllers (IC)	Has delegated authority and responsibility for managing all activities relating to an incident and determining whether an incident is, or has the potential to be, of sufficient severity to justify contacting the EOM and CAT. See AP-2973 Role of ANSTO Incident Controller [Ref: (11)]. The ICs have the authority to: • Establish an Incident Management Team (IMT). • Stand up the ANSTO Emergency Operations Centre. • Request resources and equipment. • Determine incident classification. • Contact the EOM and CAT based on the severity of an incident. Note: Position reverts to the Incident Commander upon handover to External Service Organisations.
Incident Management Team (IMT)	Made up of the IC, any appointed deputy IC, Site Safety Officer, and any appointed functional leaders. They are responsible for managing the incident and working with the relevant stakeholders to protect and support people and assets threatened by the incident.
Security Personnel	During an emergency, the ANSTO campus security personnel can undertake the following functions: • Exercise emergency authority to stop and prevent unsafe acts. • Maintain site security. • Deploy additional security resources to assist with evacuation duties/ traffic management. • Cordon off and periodically patrol evacuated area, if safe to do so. • Escort external emergency services to required location within the ANSTO campus.

Role	Responsibility
Area Supervisors	Local delegate of management who is authorised by the General Manager or Team Leader to address any health, safety, or environmental concerns in their designated hazardous area. Their authority covers personnel, equipment, and processes. During an incident, the area supervisors may be called upon to provide specific detail, information, and expertise as to the status of the hazardous area. See AG-2952 Role of Area Supervisor [Ref: (12)].
Building Wardens	Form part of the initial emergency response for their building or designated area. See AG-2465 Building Wardens [Ref: (13)]. If an alarm is raised the Building Warden must: • Provide immediate response. • Follow and enact the campus Public Address (PA) system instructions. • Facilitate emergency instructions (i.e., evacuate staff to muster point or shelter in place). • Complete the AF-2340 Emergency Evacuation Register [Ref: (14)]. • Account for all building occupants.
Radiation Protection Services (RPS)	Trained specialists who are on call 24/7 to respond to radiation incidents and emergencies. Responsible for: • Undertaking radiological measurements and assessment of radiological hazards. • Reporting results and their significance. • Recommending radiological protection measures, including establishing controlled access zones for potentially hazardous radiological situations. • Recovering and making 'safe' lost or unshielded radioactive sources or materials. • Carrying out dose assessments and reconstructions. • Assisting in contamination control, surveillance, and decontamination. • Assisting State Health Authorities where workers are taken to hospital or external medical facilities.
Environmental Monitoring Group	Provide assistance to radiation incidents and emergencies in the form of providing meteorology, modelling, and environmental monitoring.
Liaison Officers	At times ANSTO will be requested to provide a Liaison Officer to support operations such as to a Local Emergency Operations Centre. ANSTO ensues suitably trained and competent persons are available to perform the function of Liaison Officer, if required. In most situations, this responsibility will be filled by the EOM.

Table 1: Roles and Responsibilities for Emergencies at the ANSTO Lucas Heights Campus

An organisational structure with the lines of authority and the functions of individuals, defined in Table 1 are visualised in Figure 1.

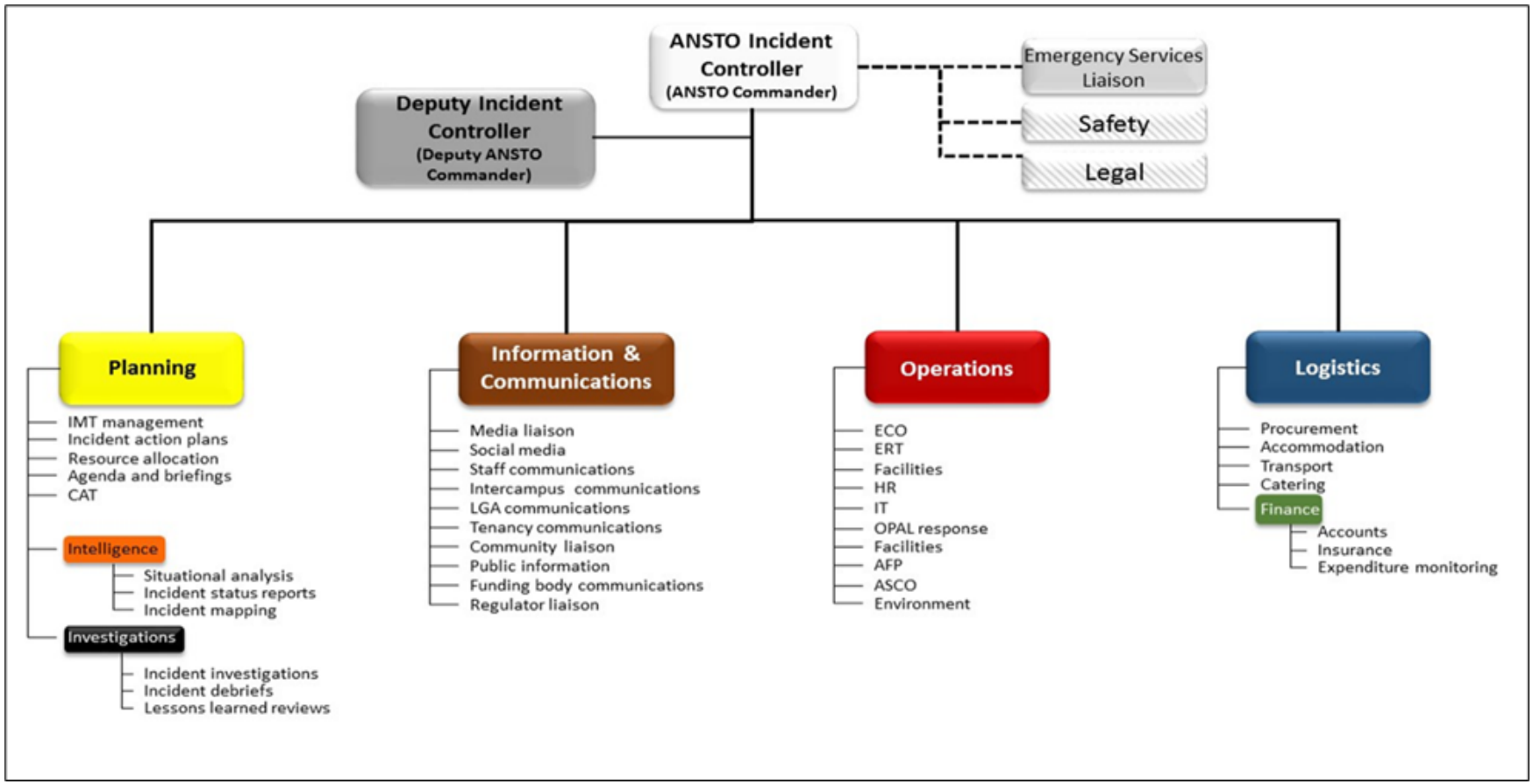

Figure 1: Functions used under the AIIMS framework

5. Emergency Arrangements

During the siting and construction phases, no operational activities are expected to occur on the site. Some site preparation activities may occur, following authorisation as part of the Siting Licence application with ARPANSA.

The AG-5950 ANSTO Emergency Management Plan: Lucas Heights Campus Emergency Plan [Ref: (15)] will apply at the NMMF site. The Site Construction Supervisor and Site Safety Officer will develop local emergency management arrangements for the NMMF site aligned with the nature and magnitude of risks noted from the emergency preparedness categorisation of the facility. The NMMF site will be fenced as a construction zone/ site with all personnel entering the site having to complete a formal and site-specific induction that covers local and campus emergency arrangements.

During the NMMF's operational phase, the NMMF Management Team and EOM will have the responsibility of ensuring emergency arrangements are in place and that all workers involved in the operation of the facility are adequately trained in emergency response procedures.

5.1. Support Plant and Services

During the operating licence application phase, ANSTO will develop, implement, and maintain the detailed emergency planning and preparedness for the NMMF in compliance with ARPANSA's guide for emergency exposure situations (Radiation Protection Series G-3 Part 1 and 2 [Ref: (8), (16)]).

Appropriate emergency exercise drills will be developed, scheduled, and practised by the work teams during the construction and commissioning phases of the Program in coordination with the Emergency Management Team and EOM. Higher level response arrangements involving all aspects of the ANSTO EM Plan are exercised regularly, including many exercises that involve external emergency services.

All emergency arrangements are continually updated, including regular updates of the contact lists and safety alarm responses. There is ongoing review of the emergency arrangements, including updating of the contact lists and safety alarm responses. The EOM will coordinate lessons learnt and will provide support to the business manager or to ensure implementation.

5.1.1. ANSTO Lucas Heights Overarching Plans

The ANSTO Lucas Heights campus emergency management arrangements are detailed the ANSTO EM Plan. The ANSTO EM Plan ensures that there are appropriate arrangements in place to competently manage all incidents by preserving life, preventing loss of property, mitigating any potential off-site consequences, and returning ANSTO operations to business as usual.

The ANSTO EM Plan also defines the roles and responsibilities, as detailed in Section 4, of nominated ANSTO personnel supporting a multi-agency response to on-site emergencies and in the provision of specialist advice, technical and practical assistance, and resources to assist external organisations' response to emergencies with off-site consequences.

The following legislation applies to the ANSTO EM Plan:

- Australian Nuclear Science and Technology Organisation Act
- Australian Radiation Protection and Nuclear Safety Act and Regulations
- Work Health and Safety Act and Regulations
- NSW State Emergency and Rescue Management Act
- NSW Protection from Harmful Radiation Act
- NSW Public Health Act.

The ANSTO Lucas Heights campus EM Plan [Ref: (15)] supports the ANSTO EM Plan and provides information specific to the Lucas Heights campus. The objectives of this plan are to:

- Provide clarity as to command and control, roles, and coordination of functions in emergency management across all levels of the organisation.
- Emphasise risk management across the full spectrum of prevention, preparedness, response, and recovery.
- Ensure that the capability and resourcing requirements of these responsibilities are understood.
- Outline how ANSTO's Lucas Heights campus will operate with external emergency services and agencies across NSW and Federal levels.

The following local, district, and state emergency management plans also apply:

- NSW State Emergency Management Plan (EMPLAN)
- NSW State Lucas Heights Emergency Sub-Plan
- NSW Hazardous Materials Emergency Sub-Plan
- Sutherland Shire Local Emergency Management Plan.

The roles and responsibilities of external Emergency Service Organisations and the Emergency Operations Controllers are given in the relevant emergency legislation and plans. ANSTO routinely engages with NSW emergency services including:

- NSW Police
- Fire and Rescue NSW (FRNSW)
- Ambulance Service of NSW
- NSW Rural Fire Service (NSWRFS)
- State Emergency Services (SES)
- Transport for NSW (TfNSW)
- NSW Health.

5.1.2. Facility-Specific Emergency Procedures

Procedures for the initial response to an incident are practised during emergency drills, consistent with the emergency response arrangements in place throughout the Lucas Heights campus. NMMF staff, including the Facility Officer and the EOM will review procedures periodically to ensure it remains appropriate for the facility.

If an incident or accident occurs which necessitates the need for an escalated emergency response, the ANSTO Lucas Heights campus emergency response arrangements will apply. Central to these arrangements is ASOC which is staffed 24/7 by trained professionals and is the focal point for communications in an emergency situation.

Dependent upon the nature of the incident or accident, ASOC may initiate a local response through the on-site ANSTO ERT. The ERT act as first responders and manage the response in accordance with standard emergency response protocols. These arrangements are described in the ANSTO EM Plan. The ERT are suitably qualified and experienced and support the emergency response by providing initial assessment of the situation and rendering assistance to personnel where safe to do so. This may include making the area safe, providing first aid, and basic rescue. The ERT or IC will escalate the response if the incident is beyond the capability or capacity of the ERT. In this case, an experienced on-call IC will be contacted by phone. This officer is experienced in emergency management and will have the required authority to take full control of the site until resolved. They will ensure that the local response is appropriate and, where necessary, that external emergency response services are contacted.

RPS provide 24/7 on-call health physics support for any radiation incidents that occur. The service is described in detail in ANSTO Lucas Heights campus EM Plan [Ref: (15)]. An experienced Health Physics Surveyor (HPS) is also contactable by phone and can respond in a vehicle containing all necessary radiation detection equipment. This support can be initiated by the on-call IC or ASOC.

Risk assessments conducted prior to the construction and operation licence applications, will indicate any additional emergency procedures required for the NMMF. During the construction phase, the Principal Contractor will have responsibility for the site and will implement and maintain emergency procedures as appropriate to the construction hazards. The Principal Contractor will develop a site-specific emergency plan/ instruction. This plan will integrate with the ANSTO threat-specific plans described in Table 2. The site-specific plan will apply to all contractors and service providers working within the NMMF enclosed site.

ANSTO will review and approve the NMMF Emergency Plan/s prior to their implementation and ensure an adequate level of emergency preparedness is maintained during the entire period of siting and construction. All emergencies that occur at the ANSTO Lucas Heights campus, including those at the NMMF, will be managed in accordance with the overarching ANSTO EM Plan. Threat-specific sub-plans, described in Table 2, have been developed for potential events that were identified during the risk assessment process for Lucas Heights campus.

Sub-plan	Description
Building Fire	This emergency response procedure details the process to be followed in the event of a building/ facility fire on campus.
Bushfire Threat	This emergency response procedure details the processes implemented in the event of a bushfire threat impacting the campus.
Campus Evacuation	This emergency response procedure details roles and responsibilities in the event of a campus evacuation.
Medical Incidents and Emergencies	This emergency response procedure details the roles, responsibilities, and procedures to be followed in the event of a medical incident or emergency at ANSTO.
Fatality	This emergency response procedure details the roles, responsibilities, and procedures to be followed in the event of a fatality at the Lucas Heights Campus or the surrounding buffer zone.
Radiological Emergency	This emergency response procedure details response tasks that need to be completed at various locations and levels.
HAZMAT/ Chemical Spills	This response procedure details the procedure to be followed in the event of a spill of a Toxic Industrial Chemical (TIC) or Volatile Organic Compound (VOC) on campus.
Oxygen Depletion/ Gas Enrichment	This emergency response procedure details the roles and responsibilities in the event of a gaseous release in a laboratory or facility on campus.
Severe Weather Event	This emergency response procedure details the procedure to be followed in the event of a severe weather event impacting campus.
Campus Utilities Disruptions	This emergency response procedure details the processes to be followed in the event of a campus loss of power or water utilities impacting campus.
Suspicious Package or Mail Item	This emergency response procedure details the roles and responsibilities of workers when managing a suspicious package or in the event of a bomb threat to the campus.

Table 2: Threat-specific sub-plans for the ANSTO Lucas Heights campus

Based on formal safety assessments conducted for the NMMF throughout its lifetime, the need for any additional emergency sub-plans will be addressed by the Program Team. However, based on current knowledge and experience in construction and operating similar facilities at the Lucas Heights campus, it is unlikely that additional plans and arrangements will be required. The Facility Officer and Contractor Supervisor will be responsible for ensuring the emergency arrangements are in place and that all personnel have adequate training for their roles.

5.1.3. Identification of various events leading to an emergency

During the site licencing stage, emergency events will be related to site preparation activities and therefore will fall under the arrangements of the ANSTO Lucas Heights campus EM Plan [Ref: (15)]. As the design progresses, additional information will be available to identify various operating events and other conditions which could lead to the need for intervention.

From an operational perspective, the Safety and Security Consequence Analysis [Ref: (6)] identified the following potential bounding case accidents:

- Building fire
- Seismic event
- Security event.

It is assessed that a large-scale building fire, which has the potential to result in the airborne release of all the available radioactive materials stored in the facility, represents the bounding case accident with respect to releases to the environment. These bounding case accidents will be recognised and integrated into the scope and controls of the ANSTO Lucas Heights campus EM [Ref: (15)].

As the scope of the NMMF matures through the design phase, formal safety assessments will be conducted and emergency response and mitigative controls will be identified and incorporated into relevant threat-specific and facility-specific emergency plans.

5.1.4. Allocation of Responsibilities and Training

The emergency arrangements described in this emergency plan include appropriate rostering systems, back-up procedures, and personnel for all emergency roles. All staff with a role in emergency response are trained, retrained, and must participate in exercises. Procedures for the initial response to any incident are practised in emergency drills, consistent with the emergency response arrangements in place throughout the Lucas Heights campus. NMMF staff, including the Facility Officer and ANSTO EOM, will review the procedures periodically to ensure it remains appropriate for all operations.

All ANSTO employees and contractors are required to undertake a campus safety induction prior to being permitted on campus to ensure that they are familiar with the ANSTO EM Plan and their individual responsibilities during an incident or emergency. All individuals are required to be familiar with the following:

- The types of potential emergencies and their individual response requirements.
- Emergency instruction boards.
- Emergency exit locations.
- External and internal muster points.
- Designated Building Wardens.

All individuals must participate in periodic ANSTO and local emergency exercises and follow procedure during any emergency exercise.

5.1.5. Identification and Assessment of an Incident

The ANSTO EM Plan applies a scalable approach to incident classification, as detailed in Table 3. This allows the early implementation of Incident Management functions under the control of the Incident Controller as detailed in AG-2973 Role of the ANSTO Incident Controller [Ref: (11)].

Incident level	Incident description	Incident significance
Level 1	Incidents which can be managed as part of business as usual. Response uses local resources available or as part of a routine technical response e.g., Building Warden, HPS, ERT, or ASOC.	**Tactical significance** This level relates to frontline activities being delivered by incident and emergency response personnel. Tactical level activities may be in accordance with established procedures and may also be developed by supervisors on the ground. Tactics are conducted to achieve the broader objectives and strategies established by the IMT. Planning cycles may range from hours to days.
Level 2	Incidents which are of a more serious nature and are more complex in size, duration, resource management, and risk. Response requires specialist centralised assistance or resources to resolve e.g., IC to delegate tasks and establish an internal IMT.	**Operational significance** The operational level is the bridge between the tactical and strategic plans. Decisions are made about what activities are needed to achieve incident objectives and how activities should align to meet the broader strategies and directions set by the IC.
Level 3	Incidents which have a broad institutional impact and are characterised by a degree of complexity. Response requires an enterprise coordinated response e.g., IC to delegate all incident management functions to focus on strategic leadership, response coordination, and may require external emergency service organisation intervention.	**Strategic significance** The strategic level considers the impacts of emergency activities on a long timescale and has regard to effects that extend beyond the emergency.

Table 3: Incident classification levels and triage system of integrated response

Table 3 provides an overview of the different level of management required for incidents at each level.

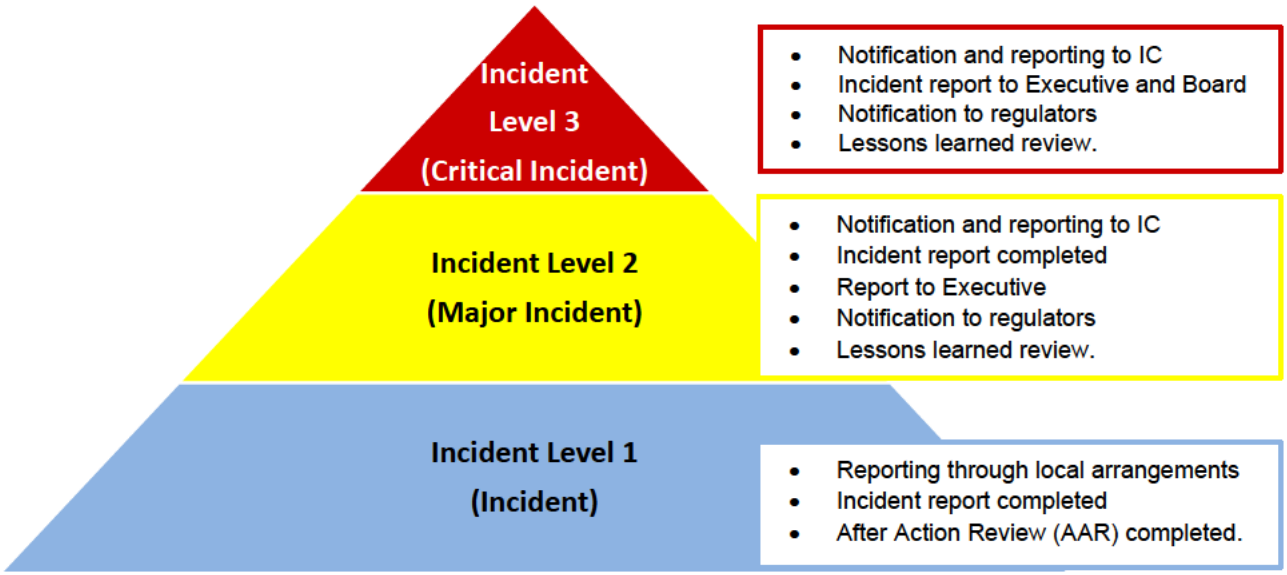

Figure 2: Overview of the management of incidents across the three incident levels

Incident Action Planning is a process that supports the Incident Management system. After consideration of all factors affecting an incident, an Incident Action Plan is developed to manage the incident and as a tool to communicate the incident objectives.

The function of an Incident Action Plan is to:

- Describe the overall incident objectives and strategies.
- Identify key risk exposures (including the impact on the community and the environment).
- Ensure continuity of control operations.
- Provide effective use of resources.
- Identify total anticipated resources.

The Incident Action Plan for emergencies with low potential and of low consequence will require notification to the rostered incident controller and be recorded as a logbook entry or a situation report. For an emergency that has medium to high potential consequences the rostered Incident Controller must be contacted immediately, and an Incident Action Plan summary documented within four hours of the incident being reported, while a documented Incident Action Plan is required for major emergencies. There should also be an Incident Shift Plan that addresses as a minimum the current Situation Report (SITREP) and actions to be taken and decisions required during the next operational shift.

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5.1.6. Learning and Development

Lessons learned are integrated into training and exercises following any minor or major incidents or disruptions, through the conduct of reviews, debriefs, and investigations, and post-incident and post-exercise reports. The operational debrief and After Action Review (AAR) is an important part of concluding response and recovery operations as described in the ANSTO EM Plan [Ref: (4)]. Following any incident or emergency that meets Level 2 or above, a full AAR process will take place with all stakeholders involved in the incident or emergency. The primary focus of the AAR is one of continuous improvement and learning. It is critical that the emergency plans be assessed for their suitability, structure, and practicality against the actual response to the incident or emergency.

Final outcomes and recommendations are to be provided to ANSTO's Risk and Compliance Committee through the Governance, Risk and Compliance (GRC) process. Minor changes need not be referred to the Risk and Compliance Committee at the discretion and approval of the EOM.

In addition to the lessons learned, exercises are a critical component of preparedness and are used to enhance capability and contribute to continuous improvement. ANSTO has regulatory and licencing requirements to conduct regular emergency response exercises.

For all ANSTO buildings occupied by staff and those considered potentially at risk, the relevant Building Wardens must conduct an emergency exercise at least annually and forecast the date through the Emergency Planning Committee. During the operational phase the NMMF will be incorporated into the Emergency Exercise Risk Assessment and Schedule, as detailed in the ANSTO EM Plan [Ref: (4)].

Building Wardens are responsible for developing, planning, and conducting exercises following review and endorsement by the EOM and Radiological Emergency Manager. The EOM and/ or the Radiological Emergency Manager may assist in facilitating those exercises, as detailed in AP-2361 Planning Emergency Exercises [Ref: (17)].

The emergency plan is exercised regularly to:

- Test emergency equipment.
- Test the adequacy of on-site personnel resources.
- Ensure that personnel understand their responsibilities and relationships within their organisation and procedures for interfacing with Intervening Organisations.
- Test communications and communication equipment.
- Test evacuation procedures and evacuation routes.
- Confirm the viability of intervention measures to protect off-site personnel and the environment.
- Confirm the availability of suitable public information systems.
- Confirm the availability of external facilities, including those for the provision of medical aid to treat injured and/ or radioactively contaminated persons.
- Test the emergency response interface with government, local authorities, and off-site agencies.

A debrief will be conducted following each exercise using AF-2609 Emergency Exercise Risk Assessment and Report [Ref: (18)]. This will allow stakeholders to provide feedback on all aspects of the exercise. A written evaluation report of the exercise will be provided to the EOM for record keeping. This can include observations, findings, treatment options, or recommendations based on the information gathered during the exercise.

A corrective or any other action items shall be submitted in the Governance, Risk, and Compliance (GRC) Incident Management System for emergency exercises. Any actions arising from the exercise shall be added to the item and monitored by the EOM or other nominated responsible officers.

5.1.7. Public Information Releases

The NMMF will refer to the ANSTO Incident Controller for direction of release of information to the public in conjunction with the ACSE team. ANSTO protocols and procedures regarding the release of information to the public for any emergency events that occur. Specifically, all media communications will be via the ANSTO Communications and Stakeholder Engagement (ACSE) team as specified in AG-7401 ANSTO Communications & Stakeholder Engagement Instructions [Ref: (19)].

5.1.8. Prediction of Significance of a Radioactive Discharge

The Safety and Security Consequence Analysis [Ref: (6)] for the bounding case release from the NMMF has been conducted using PC-Cosyma as well as key conservative assumptions. The analysis was performed reflecting day and night conditions for projected effective doses and thyroid doses for exposure of adults, children, and infants at various distances from the NMMF.

The Safety and Security Consequence Analysis identified building fire, seismic event, and security event as potential bounding case accidents. It concluded that a large-scale building fire which has the potential to result in the airborne release of all the available radioactive materials stored in the facility represents the bounding case accident with respect to releases to the environment.

Based on the Safety and Security Consequence Analysis and ARPANSA Guide for Radiation Protection in Emergency Exposure Situations – The Framework Radiation Protection Series G-3 Part 1 an operational emergency preparedness category II was determined to reflect the significance of the worst-case postulated emergency event.

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5.1.9. Follow up After an Event

To enable continuous improvement, an incident response debrief will be held following an incident. The timeframe for holding the debrief is dependent on the incident classification. The following timeframes should be followed:

- Incident Level 2 or above - Immediate hot debrief
- Incident Level 2 - Cold debrief within two weeks
- Incident Level 3 - After Action Review (AAR) within 21 days.

Following an incident the EOM must arrange for a formal debrief or investigation. The mechanism to formally record the debrief or investigation is a Safety Incident Notification which must be submitted in the GRC Incident Management System. Actions arising from the debrief or investigation must be added to the incident record and monitored by the ANSTO EOM.

An AAR must occur within 21 days of a Level 3incident having been de-escalated from level 2 or above. The primary focus of the AAR is one of continuous improvement and learning. It is critical that the emergency plans be assessed for their suitability, structure, and practicality against the actual response to the incident or emergency.

Final outcomes and recommendations are to be provided to the ANSTO Risk and Compliance Committee.

Business continuity encompasses response, recovery, and resumption of activities impacted by a disruption and ANSTO's capability to continue to deliver products or services at acceptable predefined levels following a disruptive incident.

5.2. Local Emergency Procedures

In addition to the ANSTO site arrangements, local emergency procedures are in place for the NMMF. Local emergency procedures are based on the analysis of postulated incidents documented in the NMMF Safety Analysis Report [Ref: (3)]. As per ARPANS Regulations, the established Operating Limits and Conditions (OLCs) are mandatory and must be complied with at all applicable times. Once the siting licence has been obtained and the Program progresses, local emergency procedures are to be developed as more information about the design and operating environment is available.

The Principal Contractor will develop a site-specific emergency plan/ instruction which will be integrated into ANSTO threat-specific plans. The ANSTO EM Plan will apply to all contractors and service providers working within the NMMF enclosed site.

5.3. Emergency Preparedness

ANSTO remains prepared for all potential incidents or emergencies by:

- Developing and implementing procedures and incident or emergency protocols such as AG-5236 Radioactive Spill/ Contamination Response & Recovery [Ref: (20)] and AG-5535 Chemical Emergency Response & Spill Management [Ref: (21)].
- Maintaining a current critical contacts list.
- Maintaining signoffs and checklists to document completion of actions prescribed in procedures as appropriate.
- Providing adequate and ongoing training for identified people.
- Conducting desktop and field exercises.
- Maintaining ongoing liaison with emergency service agencies.
- Identifying resources and equipment required for effective emergency response.
- Identifying roles and responsibilities for individuals and ensure back-up officers are available.
- Identifying key personnel and reliable means of communication.
- Maintaining documentation so potential incidents or emergencies can be adequately managed.

ANSTO ensures that resources are available across the entire Lucas Heights campus so that any information or instruction relating to an emergency situation can be efficiently and effectively communicated to all staff. The resources available for communication include:

- Telephone systems
- Campus PA System
- Mass messaging (SMS and email)
- Radio communications
- Intranet and email.

Additionally, the ANSTO ERT are provided sufficiently maintained facilities and equipment to ensure that they can provide first response assistance for any foreseeable emergency situations. This includes, but is not limited to, the following:

- Emergency vehicles
- Firefighting equipment
- Medical response equipment
- General rescue equipment
- Personal protective equipment
- Specialist radiation monitoring, sampling, and detection equipment
- Decontamination supplies
- HAZMAT spill control equipment
- Emergency control rooms
- Communication facilities
- Maps, floor plans, and any other reference materials.

6. Industry Best Practice

The emergency plan employing local arrangements at ANSTO site emergency response is consistent with industry best practice. The ANSTO Emergency Management Plan and overall emergency management arrangements are endorsed by and interoperable with NSW Emergency Service Organisations.

Additionally, the Lucas Heights campus EM Plan has been established under the guidance of the following national and international guides and standards:

- GSR Part 7 IAEA Preparedness and Response for a Nuclear or Radiological Emergency [Ref: (22)].
- GSG-2 IAEA Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency [Ref: (23)].
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- AS/NZ ISO 31000 – Risk Management - Guidelines [Ref: (26)].
- AS/NZ 3745 – Planning for Emergencies in Facilities [Ref: (27)].
- AS/ISO 22301 – Security and Resilience - Business continuity management systems – Requirements [Ref: (28)].
- Australasian Inter-Service Incident Management System (AIIMS) Edition 7 [Ref: (29)].

7. Definitions

The following abbreviations / definitions have been used in this document:

Term	Definition
AAR	After Action Review
ACSE	ANSTO Communications and Stakeholder Engagement
AIIMS	Australasian Inter-Service Incident Management System
ANSTO	Australian Nuclear Science and Technology Organisation
ARPANS	Australian Radiation Protection and Nuclear Safety
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASOC	ANSTO Site Operations Centre
CAT	Consequence Assessment Team
CEO	Chief Executive Officer
EM Plan	Emergency Management Plan
EOM	Emergency Operations Manager
ERT	Emergency Response Team
FRNSW	Fire and Rescue NSW
GE AME	Group Executive, ANSTO Maintenance and Engineering and Chief Engineer
GE NSSS	Group Executive, Nuclear Safety Security and Stewardship
GRC	Governance, Risk, and Compliance
HPS	Health Physics Surveyor
IAEA	International Atomic Energy Agency
IC	Incident Controller
IMT	Incident Management Team
NMMF	Nuclear Medicine Manufacturing Facility
NMMP	Nuclear Medicine Manufacturing Program
NSWRFS	NSW Rural Fire Service
OLCs	Operating Limits and Conditions
PA	Public Address
RPS	Radiation Protection Services
SES	State Emergency Services
SIAM	Standard Iodine Adsorption Module
SITREP	Situation Report
TfNSW	Transport for NSW
TIC	Toxic Industrial Chemical
VOC	Volatile Organic Compound

8. References

The following are referred to in this document or were used in its creation.

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12. AG-2952 Role of Area Supervisor.
13. AG-2465 Building Wardens.
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