



Australian Government

Department of Defence

DEPARTMENT OF DEFENCE

MFPE 2011
MANUAL OF FIRE PROTECTION ENGINEERING

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FOREWORD

1. The *Manual of Fire Protection Engineering* (MFPE) is the primary policy document when determining fire safety requirements for Defence facilities and its provisions are mandatory.
2. This manual can be accessed from the Defence Infrastructure Management web site on the Defence Intranet. It is also available to the public on the Internet at <http://www.defence.gov.au/im/>.
3. The MFPE nominates the Building Code of Australia (BCA) as the minimum construction standard for Defence Facilities, but, recognising the unique nature of some Defence facilities and equipment housed in those facilities, the manual takes a risk assessment and risk management approach to fire safety and generally nominates higher levels of fire safety than those required by BCA.
4. All Defence new construction and refurbishment projects are required to be certified by an independent accredited building surveyor as meeting the fire safety requirements detailed in this manual.

A handwritten signature in black ink, appearing to read 'John Owens', written in a cursive style.

JOHN OWENS
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14 July 2011

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CHAPTER 1

FIRE PROTECTION OF DEFENCE ASSETS

INTRODUCTION

1.1 Defence protects the health and safety of its personnel and the operational capability of its assets both in Australia and overseas through the implementation of fire protection policies stated within the Manual of Fire Protection Engineering (MFPE). The MFPE describes Defence specific aspects for fire protection measures and provides the corporate fire safety policies, standards and procedures necessary for the application of fire safety in support of Defence objectives. The level of fire protection required in a Defence asset depends on the life safety risk, Defence value and the vulnerability of the asset and its contents.

1.2 The fire protection philosophy for Defence assets is the provision of fire protection measures such that the sum of the through life costs of all fire safety components provided and the expected asset losses over time are minimised. Defence therefore requires fire protection measures to be installed in buildings to meet these obligations. Any special Defence value must be taken into account when determining the fire protection requirements for Defence assets.

1.3 The MFPE is Defence policy empowered by [Defence Instruction \(General\) ADMIN 20–26—Defence Manual of Fire Protection Engineering](#). The requirements of the MFPE are mandatory and are to be applied retrospectively. The individual chapters of the MFPE detail the fire protection measures for Defence assets based on the classification of the asset as described at [paragraph 1.20](#).

AIM

1.4 The aim of this chapter is to detail Defence policy in relation to:

- a. compliance requirements for new construction, new works in existing buildings including *Substantial Alterations*, *Change-in-Use* as well as requirements for existing and leased buildings;
- b. Asset Classification selection and Criticality Assessment for Defence facilities;
- c. general fire protection provisions for Defence buildings; and
- d. requirements for reporting of fires.

REFERENCES

1.5 Reference is necessary to current issues of the following documents:

- a. Australian Standards (AS);
- b. Building Code of Australia (BCA); and
- c. International Fire Engineering Guidelines—2005 Edition.

COMPLIANCE REQUIREMENTS

1.6 The BCA shall be adopted as the minimum Defence fire safety standard for New Construction, leased buildings, *Substantial Alteration or Change-in-Use* of Defence occupied buildings. The BCA that is applicable for any project is to be the one that is adopted by the Australian Government at the time of *Building Approval*. Compliance with State and Territory appendices of the BCA is not required on Defence owned Commonwealth land. As per part 6 of the Commonwealth of Australia appendix to the BCA, the MFPE is considered as the Defence equivalent to the State and Territory appendices for fire safety matters.

1.7 The primary fire safety objectives of the BCA are to provide for life safety and adjoining property protection. The MFPE specifies higher levels of fire protection, based on the Asset Classification, than those required by the BCA and also stipulates compliance with other codes and standards to enhance life safety, asset protection and continuity of operations. The requirements of the MFPE are mandatory and are to be applied retrospectively.

1.8 The release from the mandatory requirements of the MFPE may only be granted if a *Dispensation* is approved in accordance with the process detailed in [chapter 26—‘Alternative design solutions, dispensations and certification for defence projects’](#).

1.9 The requirements of the BCA are met by demonstrating compliance with the performance requirements of the BCA. This is achieved by either complying with the deemed-to-satisfy provisions of the BCA, by developing an *Alternative Solution*, or by a combination of both methods. The development of *Alternative Solutions* shall be in accordance with the International Fire Engineering Guidelines Edition 2005. The use of an *Alternative Solution* may only be permitted if approved in accordance with the process detailed in [chapter 26](#).

1.10 Where there is conflict between the MFPE and the BCA, the requirements of the MFPE shall take precedence.

1.11 Where a facility does not fit the building classifications given in the BCA, or where, for operational reasons, cannot be provided with the requirements of the MFPE, such as Specialist Training Facilities required to be designed to provide training realism, a fire safety strategy shall be developed on the basis of a fire risk assessment agreed with the Director Estate Engineering Policy (DEEP) and, as appropriate, submitted as a Dispensation in accordance with [chapter 26](#).

New construction

1.12 All new construction shall comply with the requirements of the MFPE and the BCA. The process shall follow the requirements detailed in the ‘Procedural Guidelines for Designers, Certifiers and Consultants’ found at the Defence Infrastructure Management website.

1.13 Where existing Defence owned or leased buildings are proposed to be altered or extended, and those alterations constitute a *Substantial Alteration*, then compliance with the MFPE and the BCA is required throughout the building.

1.14 Where existing Defence owned or leased buildings are proposed to be altered or extended, and those alterations do not constitute a *Substantial Alteration*, then the following applies:

- a. the new works shall comply with the MFPE and the *fire safety provisions of the BCA*; and
- b. the new works shall not unduly affect the fire safety within the remainder of the existing building.

New leases

1.15 All new leases shall be assessed against the requirements of the MFPE and the BCA and compliance confirmed prior to entering into the lease.

Non-Defence owned buildings

1.16 Non-Defence buildings that contain strategic Defence assets and equipment, where their loss would have a significant strategic impact shall have the same fire protection requirements as Defence owned or leased buildings.

Existing buildings

1.17 Existing Defence owned or leased buildings that are not the subject of any building work must comply with the latest version of the MFPE and the *Building Approval* requirements at the time of construction. In addition, assessment of the *fire safety provisions of the BCA* must be undertaken following the process outlined in [chapter 13—‘Fire safety surveys—Defence assets’](#).

Change-in-use

1.18 Where a building's occupancy classification is proposed to be changed, then compliance with the MFPE and the BCA is required.

1.19 Where a building's use, function, contents, *Asset Classification or Criticality Assessment* is proposed to be changed and there is no change to the building's occupancy classification, then compliance with the MFPE is required.

ASSET CLASSIFICATION

1.20 The level of fire protection required in a Defence installation depends on the life safety risk, Defence value and the vulnerability of the asset and its contents to fire. The Asset Classification is aligned with the 'Contribution Factor of Defence Estate Assets' and is to be used to assign the additional fire protection requirements defined within the respective chapters of the MFPE.

1.21 The Contribution Factor of an asset is assessed in the context of its contribution to capability including:

- a. the operation of military platforms;
- b. the morale and well-being of personnel performing vital tasks efficiently and effectively; and
- c. availability of alternative asset and non asset means to deliver or support Defence operations.

1.22 Defence categorises assets as follows:

- a. **Major assets (MA).** Major assets provide a very high level contribution towards operational and personnel capability. These assets are or have areas critical to the operation of military platforms, Australian Defence Organisation (ADO) objectives or national objectives. The compromise of a MA would be of major concern to the ADO with repercussions such as:
 - (1) very high impact on the overall capability of the ADO; or
 - (2) very high danger to many members of the public or the ADO.
- b. **Important assets (IA).** Important Assets provide a direct and high level contribution towards operational and personnel capability. These assets are or have areas critical to the operation of a military platform, national security objective or Group objective or are essential for effective operation of a Major Asset. The compromise of an Important Asset would be a high concern to Australia's national security, with repercussions such as:
 - (1) high impact on the overall capability of the ADO;
 - (2) high danger to many members of the public or the ADO;
 - (3) lengthy lead times to restore extant capabilities;
 - (4) high embarrassment to the ADO; or
 - (5) very high asset replacement costs.
- c. **Support assets (SA).** Support Assets perform a capability support function to enable the efficient and effective functioning of operational and personnel capability and Major and Important Assets. The compromise of a Support Asset would be a moderate concern to Australia's national security, with repercussions such as:
 - (1) short-term impairment of an Important Asset's functions;
 - (2) danger to many members of the public or the ADO;

- (3) lengthy lead times to restore capability support; or
 - (4) moderate embarrassment to the ADO.
- d. **General purpose assets (GPA).** General Purpose Assets perform day-to-day base functions supporting operational and personnel capability. The compromise of a General Purpose Asset could cause the temporary impairment of a Support Asset's functions or a moderate impact to a single capability element (eg base unit). General Purpose Assets are typically:
- (1) low in replacement value,
 - (2) require regular maintenance,
 - (3) require normal fire protection, and
 - (4) require normal security protection.
- e. **Low importance assets (LIA).** Low Importance Assets are typically:
- (1) low in replacement value,
 - (2) require occasional maintenance,
 - (3) require reduced fire protection, and
 - (4) require reduced security protection.

1.23 Project Directors are responsible for ensuring the asset classification process has been completed for all new projects, refurbishments and where there is a change in building use. To facilitate the process and to formally record its conclusions, the Asset Classification Form at [annex A](#) shall be used. The completed Asset Classification Form shall be part of the design documentation for the building. Project Directors are responsible to ensure the process has been completed before starting design and the form is attached to the structure in Defence Estate Management System (DEMS) prior to building handover.

1.24 The asset classification process is required for existing buildings that have not had a previous assessment or where the basis of the original assessment has changed. Where required, the Defence Support Operations (DSO) Regional Director is to nominate a representative to undertake the Project Sponsor role for the completion of the Asset Classification Form at [annex A](#). The DSO Regional Director must ensure that the form is attached to the structure in DEMS.

CRITICALITY ASSESSMENT

1.25 Functions and equipment which are critical to Defence operational capability and National security will require further levels of protection. In accordance with [chapter 20—'Critical equipment and facilities—fire protection'](#), a Criticality Assessment is to be undertaken to determine the level of fire protection required for critical/expensive/long lead time equipment.

1.26 Project Directors are responsible for ensuring the criticality assessment process has been completed for all new projects, refurbishments and where there is a change in building use. To facilitate the process and to formally record its conclusions, the Criticality Assessment Form at [annex A](#) shall be used. The completed Criticality Assessment Form shall be part of the design documentation for the building. Project Directors are responsible to ensure the process has been completed before starting design and the form is attached to the structure in DEMS prior to building handover.

1.27 The criticality assessment process is required for existing buildings that have not had a previous assessment. Where required, the DSO Regional Director is to nominate a representative to undertake the Project Sponsor role for the completion of the Criticality Assessment Form at [annex A](#). The DSO Regional Director must ensure that the form is attached to the structure in DEMS.

GENERAL FIRE PROTECTION PROVISIONS

Principles

1.28 The following principles are to be adopted when considering fire protection provisions:

- a. protection for a particular asset shall be considered at the conceptual/briefing stage, shall be planned at the design stage and included in the building specifications;
- b. protection of existing assets shall be assessed in the light of current or future use, especially if and when any Substantial Alteration or change in use is contemplated; and
- c. the nature and type of protection to be installed shall be determined by project proponents and shall be in accordance with the MFPE and the BCA. Final design approach shall be supported by DEEP.

Fire detection

1.29 Fire detection systems shall be installed when required by the provisions of the BCA. In some cases, additional requirements are specified in the MFPE. Where this occurs, the requirements of both the MFPE and the BCA must be met. Where a detection system is required, it shall be a smoke detection system installed in accordance with the requirements of BCA clause 4 of specification E2.2a and AS 1670.1-2004—Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire.

1.30 In addition, Defence requires a fire detection and alarm system for all Major Assets and Important Assets as defined at [paragraph 1.22](#).

1.31 Buildings with full suppression systems may have reduced or no detection as per the requirements of the BCA.

Fire suppression

1.32 Sprinkler systems shall be installed when required by the provisions of the BCA. In some cases, additional requirements for suppression systems are specified in the MFPE. Where this occurs, the requirements of both the MFPE and the BCA must be met.

Fire protection equipment—Accredited products listing

1.33 To ensure that products of recognised quality are installed in Defence facilities, only products registered in the Accredited Products Listing shall be installed. For further details see [chapter 7—'Acceptance of design and construction'](#).

FIRE SUPPRESSION AND DETECTION SYSTEM MONITORING

1.34 All suppression and fire detection systems shall be connected to a monitoring service provider, fire station dispatch centre or an appropriately staffed duty room where available. Monitoring is not required for remote facilities that are not provided with a fire brigade response or a staffed duty room.

1.35 Where Defence Service fire stations or contracted Fire Brigades are available, all fire alarms are to terminate at the fire alarm console of the fire station. Where this occurs, the fire alarm monitoring system shall comply with AS 1670.3-2004—Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire alarm monitoring. If no permanently manned Defence Service fire station or contracted Fire Brigade station is available, alarms are to terminate at a fire alarm console in an appropriately staffed duty room on the base or installation where available. Refer to [paragraph 1.34](#) for monitoring policy when there is no fire brigade response or a staffed duty room. Connection from the console to the public authority Fire Brigade to provide automatic alerting is not necessarily required. Where possible, mutual aid arrangements should be developed so that support may be obtained from the public authority Fire Brigade where available.

REPORTING OF FIRES

1.36 All building fires and bushfires within Department of Defence owned or leased properties shall be reported to Assistant Director Estate Engineering Policy—Fire Safety, facsimile (02) 6266 8211, telephone (02) 6266 8184 using the [Form AB 047](#)—Fire Service Incident Report available from the [Defence Web Form System](#) on the [Defence Intranet](#). Fires shall also be reported to the Base Services Manager, Defence Support Group, in the region in which the fire occurs.

Annex:

- A. [Asset Classification Form and Criticality Assessment Form](#)

ASSET CLASSIFICATION FORM AND CRITICALITY ASSESSMENT FORM

DSG Region:		Establishment:			
Building No:		Building Name:			
Definitions of Asset Classifications are detailed in MFPE paragraph 1.24 and reproduced below. The Project Sponsor Representative and User Representative must assess the asset against the definitions below and record the results on this form. The highest agreed affirmative answer determines the Asset Classification.			Project Sponsor Representative (YES/NO)	User Representative (YES/NO)	
MA	<p>Major assets provide a very high level contribution towards operational and personnel capability. These assets are or have areas critical to the operation of military platforms, Australian Defence Organisation (ADO) objectives or national objectives. The compromise of a MA would be of major concern to the ADO with repercussions such as:</p> <ul style="list-style-type: none"> • Very high impact on the overall capability of the ADO; or • Very high danger to many members of the public or the ADO. 				
IA	<p>Important Assets provide a direct and high level contribution towards operational and personnel capability. These assets are or have areas critical to the operation of a military platform, national security objective or Group objective or are essential for effective operation of a Major Asset. The compromise of an Important Asset would be a high concern to Australia's national security, with repercussions such as:</p> <ul style="list-style-type: none"> • High impact on the overall capability of the ADO; • High danger to many members of the public or the ADO; • Lengthy lead times to restore extant capabilities; • High embarrassment to the ADO; or • Very high asset replacement costs. 				
SA	<p>Support Assets perform a capability support function to enable the efficient and effective functioning of operational and personnel capability and Major and Important Assets. The compromise of a Support Asset would be a moderate concern to Australia's national security, with repercussions such as:</p> <ul style="list-style-type: none"> • Short-term impairment of an Important Asset's functions; • Danger to many members of the public or the ADO; • Lengthy lead times to restore capability support; or • Moderate embarrassment to the ADO. 				
GPA	<p>General purpose assets (GPA). General Purpose Assets perform day-to-day base functions supporting operational and personnel capability. The compromise of a General Purpose Asset could cause the temporary impairment of a Support Asset's functions or a moderate impact to a single capability element (eg base unit). General Purpose Assets are typically:</p> <ul style="list-style-type: none"> • Low in replacement value; • Require regular maintenance; • Require normal fire protection; and • Require normal security protection. 				
LIA	<p>Low importance assets (LIA). Low Importance Assets are typically:</p> <ul style="list-style-type: none"> • Low in replacement value; • Require occasional maintenance; • Require reduced fire protection; and • Require reduced security protection. 				
		Project sponsor		User representative	
Service/Group					
Name					
Position					
Signature					
Date					

DSG Region:	Establishment:
Building No:	Building Name:

Criticality Assessment (Ref. MFPE Chapter 20). Critical Equipment and Facilities—Fire Protection

Room Data Reference	Asset	Room	Room	Room	Room	Room
Asset/Room name						
Nature of Use						
What is the approximate replacement timeframe if the Asset, Equipment or Function were lost as the result of a fire?						
Is the loss of the Asset, Equipment or Defence Function for the identified period of time tolerable from a Defence Capability and National Security point of view?	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)
Can the function be carried out elsewhere without loss of function?	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)
What is the approximate value of the equipment or facility?	\$	\$	\$	\$	\$	\$
Is this value an acceptable loss in the event of fire?	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)	(YES/NO)
		Project sponsor		User representative		
	Name					
	Position					
	Signatures					
	Date					

Note: The Criticality Assessment Matrix seeks to identify critical assets, equipment and building functions, which, if the asset or function is lost through a fire event, will significantly impact on Defence operational capability and/or National security.

CHAPTER 2

FIRE AND EMERGENCY PROCEDURES

2.1 This chapter is deleted and reserved. Policies on fire and emergency procedures in Defence establishments are located at <http://intranet.defence.gov.au/emergencymanagement>.

CHAPTER 3

BUILDING EMERGENCY WARNING SYSTEMS

Scope

3.1 This chapter applies to new construction and *Substantial Alteration* and provides guidance on the provision of building emergency warning systems in Defence buildings.

3.2 For the purposes of this chapter, a building emergency warning system includes:

- a. Building Occupant Warning System (BOWS) which is required as part of a fire detection and/or sprinkler system, or
- b. Sound Systems and Intercom Systems for Emergency Purposes (SSISEP).

Note

The requirements for Emergency Warning and Intercommunication System are superseded by the requirements for SSISEP.

Aim

3.3 The aim of this chapter is to set out the minimum requirements of building emergency warning systems for Defence buildings.

References

3.4 Reference is necessary to current issue of the following documents.

- a. Building Code of Australia (BCA)—volume 1.
- b. Australian Standard (AS) 1670.1–2004—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire*.
- c. Australian Standard (AS) 1670.4–2004—*Fire Detection, Warning, Control and Intercom Systems—System Design, Installation and Commissioning—Sound Systems and Intercom Systems for Emergency Purposes*.

Requirements

3.5 A BOWS is to be installed in Defence buildings when required by the BCA or MFPE. All BOWS shall be installed in accordance with the BCA and AS 1670.1–2004 and shall include:

- a. A public address system that is audible throughout all parts of the building.
- b. Warning signals for the hearing impaired via means other than loudspeakers as appropriate.

3.6 A SSISEP is to be installed in Defence buildings when required by the BCA or MFPE. All SSISEP shall be installed in accordance with the BCA and AS 1670.4–2004 and shall include:

- a. red fire alarm Manual Call Points connected to both the fire and warning systems. Note: white Emergency Call Points that are connected only to the warning system shall not be used; and
- b. warning signals for the hearing impaired via means other than loudspeakers as appropriate.

CHAPTER 4

INTERRUPTION TO NORMAL PUBLIC FIRE BRIGADE SERVICES

Reserved.

CHAPTER 5

DEFENCE LIVING-IN ACCOMMODATION

Scope

5.1 This chapter is applicable to all Living-in Accommodation (LIA) buildings and areas in other buildings used for sleeping. The two categories of Defence LIA are permanent and transient.

Aim

5.2 To provide Defence specific requirements for fire protection in LIA buildings and areas in other buildings used for sleeping.

References

5.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA).
- b. Australian Standard (AS) 1670.1—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire*.
- c. AS 1670.6—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Smoke alarms*.
- d. AS 3786—*Smoke alarms*.
- e. AS 4428.1—*Fire detection, warning, control and indicating systems—Control and indicating equipment—Fire*.

Design requirements

5.4 LIA buildings shall be designed and constructed to meet the requirements of the BCA for class 1b, 2 and 3 occupancy classifications.

5.5 Areas used for sleeping in buildings other than LIA buildings are to be designed according to the BCA requirements for class 4 parts.

5.6 The definition of a sole-occupancy unit (SOU) is as per the BCA. Service personnel in permanent residential LIA are deemed to be related for the purpose of determining the requirements for SOUs.

Fire detection requirements

5.7 Automatic smoke detection and alarm systems shall be installed in all LIA buildings and class 4 parts of buildings in accordance with the requirements of clause 4 of specification E2.2a of the BCA and AS 1670.1.

5.8 All systems shall be monitored in accordance with [paragraph 1.34](#) and [1.35](#) of chapter 1.

5.9 Where the above requirements are not achieved, alternative solutions forming part of a request for dispensation are to be completed in accordance with the requirements of [chapter 26—'Alternative design solutions, dispensations and certification for defence projects'](#).

Notes

Where a dispensation for a smoke alarm system in accordance with AS 3786 and AS 1670.6 has been formally approved, the smoke alarm system shall comprise of smoke alarms approved in accordance with *Manual of Fire Protection Engineering* (MFPE), [chapter 7—'Acceptance of design and construction'](#). All cabinets containing rectifiers and batteries associated with hard wired smoke alarm systems shall be adequately secured to prevent unauthorised access.

Photoelectric type smoke alarms and detectors shall be installed in all bedrooms and common rooms. Hard wired smoke alarm systems shall be wired in a manner such that when one smoke alarm operates, all smoke alarms provide an audible alarm.

5.10 An Alarm Acknowledgement Facility (AAF) complying with the requirements of AS 1670.1-2004 and AS 4428.1 shall be provided in *LIA* buildings. For new installations the following applies:

- a. an AAF shall be installed in all bedrooms and common rooms within *LIA* buildings; and
- b. the AAF shall be located as close as practical to the discharge door from the area served.

5.11 The use of multi-criteria detectors is not permitted in *LIA* buildings. Where smoke detection is required, photoelectric and ionisation types are the only types permitted.

CHAPTER 6

BUSHFIRE MANAGEMENT AND MITIGATION ON THE DEFENCE ESTATE

Scope

6.1 This chapter identifies the requirements for bushfire management and mitigation. The provisions of this chapter apply to all properties owned or leased by the Department of Defence and are to be considered a 'Legal and other Requirement' under the Defence Environmental Management System (EMS). As such; each property that is either owned or leased by Defence is to be assessed to determine if it is prone to bushfire and the possible application of this chapter.

6.2 This chapter is to be read in conjunction with other chapters of this manual, including:

- a. [Chapter 1—'Fire Protection of Defence assets'](#).
- b. [Chapter 17—'Explosive ordnance—fire safety'](#).
- c. [Chapter 19—'Fire safety—lighting of fires during periods of proclaimed high fire danger—Defence facilities'](#).
- d. [Chapter 25—'Buildings for disposal'](#).
- e. [Chapter 26—'Alternative design solutions, dispensations and certification for defence projects'](#).
- f. [Chapter 27—'Required building construction levels in designated bushfire prone areas'](#).

6.3 Defence personnel involved with particular aspects of bushfire management must also be aware of other related requirements such as the following:

- a. relevant and applicable State and Territory legislation, codes of practice and guidance pertaining to bushfire management;
- b. AS 3959-2009—*Construction of buildings in bushfire-prone areas*;
- c. [Defence Safety Manual](#), volume 1;
- d. [Defence Instructions \(General\) \(DI\(G\)\) OPS 05-1—Defence Assistance to the Civil Community—policy and procedures](#);
- e. [DI\(G\) ADMIN 40-3—Assessment and approval of Defence actions under the Environment Protection and Biodiversity Conservation Act 1999](#), and
- f. [DI\(G\) ADMIN 59-1—Management of Defence Training Areas](#).

Aim

6.4 The aim of this chapter is to define the minimum requirements for bushfire management and mitigation for all Defence properties that have been designated as bushfire prone (BP) in accordance with [paragraph 6.22](#). A diagrammatic representation of the decision tree and the requirements of a Bushfire Management Plan (BMP) is provided in [annex A](#).

Background

6.5 Australia does not have a nationally consistent approach to bushfire management and mitigation in BP areas. There is a potential risk that Defence facilities, functions and capability may be exposed to the impacts of bushfire without the necessary bushfire planning having been done and actively implemented to mitigate the bushfire risk.

6.6 In addition to the potential bushfire impacts on people and infrastructure assets, too frequent bushfires can have a negative impact on the biodiversity, landscape values and ecological processes found on Defence properties. The vision statement of the Defence Environment Policy requires Defence to protect the environmental values found on its properties, from bushfires:

'Defence will be a leader in sustainable environmental management to support the Australian Defence Force (ADF) capability to defend Australia and its national interests'.

6.7 Under the provisions of the *Environment Protection and Biodiversity Act 1999* (EPBC Act), there is also the potential for litigation if Defence personnel undertake an action in preparing for bushfires that has a significant impact on the environment. Similarly, if fire fighters undertake a reckless action on Commonwealth land that has a significant impact on the environment then they could be subject to the provisions of the EPBC Act.

6.8 Following the 2003–2004 bushfires in Australia, a National Inquiry on Bushfire Mitigation and Management was conducted. The report produced by that Inquiry and the recommendations contained within it, were accepted by the Council of Australian Governments in 2005. This chapter has been drafted in light of those recommendations and addresses each of the phases of the Bushfire risk management cycle, namely:

- a. Research, information and analysis;
- b. Risk modification;
- c. Readiness; and
- d. Response and Recovery.

6.9 The level of bushfire risk to Defence properties varies across the estate and so the planning for bushfires should be commensurate with that risk.

Roles and responsibilities

6.10 Each Defence Group and Service shall fulfil the requirements of this chapter for the properties they are responsible for and shall nominate a person to be responsible for ensuring that the requirements of this chapter are implemented. The contact details of this position is to be provided to the Director Estate Engineering Policy (DEEP), Estate Policy and Environment Branch, within three months of this chapter being promulgated. Contact details for DEEP are promulgated in the Infrastructure Manual that is available on the Defence Support Group (DSG) Intranet site.

6.11 As highlighted in [chapter 25](#) of the *Manual of Fire Protection Engineering* (MFPE), fire protection requirements are also to be maintained on properties that have been identified for disposal, up until the property is sold.

6.12 The DSG Regional Environment Officer, and the person responsible for Fire Safety matters (where they exist) in the area covered by the BMP are to be consulted in the preparation of the BMP and its associated documents.

6.13 In addition to life and property values, Defence has a responsibility to minimise the risk of bushfires impacting on its properties, spreading from its properties into neighbouring property or spreading uncontrolled on Defence owned/leased properties.

6.14 With due regard to security considerations, the development of a site BMP shall include consultation with all relevant stakeholders including the bushfire brigade(s) responsible for the region in which the Defence property is located. To assist with improving wider community understanding of Defence bushfire management and mitigation, consideration should also be given to consulting the general public surrounding the Defence property.

Objectives

6.15 In order of priority, the objectives of bushfire management and mitigation on Defence properties are to:

- a. protect human life;
- b. protection of assets to maintain capability before, during and after the passage of destructive bushfires;
- c. minimise the physical and environmental impact of bushfires;
- d. provide for bushfire protection work to be undertaken in an environmentally sustainable and cost effective manner; and
- e. maintain fire regimes that are appropriate and necessary to conserve the environmental values.

Definitions

6.16 Asset protection zone. An area between an asset and a bushfire hazard where bushfire fuel has been reduced significantly to protect the asset.

6.17 Bushfire. An uncontrolled fire burning in forest scrub or grassland vegetation, also referred to as a wildfire.¹

6.18 Bushfire-prone area. An area that can support a bushfire or is likely to be subject to bushfire attack.² For Defence purposes, a BP area includes both the area of vegetation that has been identified as having potential to support a bushfire; as well as a 100 m strip adjoining or, surrounding each area of such vegetation.

6.19 Bushfire attack. Attack by burning debris, radiant heat or flame generated by a bushfire which might result in ignition and subsequent destruction of a building.³

6.20 Bushfire hazard. The potential severity of a fire, usually measured in terms of intensity (kW/m).⁴

6.21 Environment: The term environment⁵ includes:

- a. ecosystems and their constituent parts, including people and communities;
- b. natural and physical resources;
- c. the qualities and characteristics of locations, places and areas;
- d. heritage values of places; and
- e. the social, economic and cultural aspects of a thing mentioned in [subparagraphs a., b. or c.](#)

Determining if a property is bushfire prone

6.22 For the purpose of this chapter, a Defence property is designated as 'BP' if it:

- a. abuts land not managed by Defence and has been designated as bushfire prone through a State/Territory or Local government process;

1 Australian Standard 3959—Construction of buildings in bushfire-prone areas.

2 Australian Standard 3959—Construction of buildings in bushfire-prone areas.

3 Australian Standard 3959—Construction of buildings in bushfire-prone areas.

4 Planning for Bushfire Protection (PBP) 2006. NSW Rural Fire Service and Planning NSW.

5 *Environment Protection and Biodiversity Conservation Act 1999.*

- b. abuts land not managed by Defence that although might not have been designated as BP through a State/Territory or Local government process; in the view of Defence personnel, the land does present a potential bushfire risk; or
- c. contains areas of vegetation that could *support a bushfire*.

6.23 If a property owned or leased by Defence is designated as BP, then certain construction standards apply to building on that property, and a BMP must be prepared in accordance with this chapter.

6.24 All properties owned or leased by Defence, shall be assessed to determine if they are prone to bushfire within 12 months of this chapter being promulgated. Because the list of properties that make up the Defence estate can change, as does the land use surrounding Defence properties, such an assessment is to be repeated again within a period not exceeding five years from the previous assessment. After completion of the assessment, the Defence Group or Service responsible for management of the designated property is to arrange for the 'BP' attribute in the property listing in the Defence Estate Management System (DEMS), to be activated

Identifying bushfire prone areas

6.25 A property that has been designated as BP may have one or more distinct BP Areas. It could also be the case, as in paragraph 6.22a. and b. above, that the area of vegetation that might support a bushfire is outside a Defence boundary but, the associated area that might be subject to bushfire attack, could be inside the Defence boundary.

- a. Properties that have been designated as 'BP' are to have a map prepared that identifies the BP Area(s). The map is to delineate:
 - (1) the vegetation that could support a Bushfire,⁶ and
 - (2) a 100m strip adjoining or, surrounding each area of vegetation delineated in paragraph 6.25a.(1).
- b. An electronic version of a map developed in paragraph 6.25b. shall be maintained in the DEMS Estate Register (see Estate Register User guide).

Bushfire prone areas and construction standards

6.26 Chapter 1 details Defence requirements for all building proposals on sites that have been designated 'BP'. Where a building involves departures from the requirements of this Manual, the BCA or, codes and standards, the requirements of chapter 1 shall apply.

Asset protection zones

6.27 To reduce the risk of assets located in designated bushfire prone areas being damaged by bushfire, Asset Protection Zones (APZ) are required between the asset and the bushfire hazard. The APZ also provides a space for firefighters to defend the asset. When planning for new assets, every effort shall be made to include the necessary APZ within the development site rather than clearing additional vegetation.

6.28 Currently there are no national standards for calculating APZ and Defence relies heavily on the bushfire brigades in the Local Government Area (LGA) surrounding its properties to respond to bushfires on its properties. To minimize confusion in emergency situations, it is important that firefighters can expect to be operating within APZ specifications that are at least the same as those they are familiar with. Therefore, as a minimum requirement, the methodology used to determine APZ on Defence properties should be the same as that recommended in the surrounding LGA. If there is a reason why an LGA specification is not appropriate, then the reason for not implementing the specification(s) and what protection measure(s) has been implemented to achieve an equivalent level of protection must be documented in the BMP. Where a Defence property happens to span two or more LGA, then the guiding principle should be to comply with the higher standard as a minimum.

6 The perimeter is to encompass all of the BP vegetation types.

6.29 It is important to recognise that built assets range in importance and their capability value. The rating criteria listed in [chapter 1](#) of the MFPE is to be taken into consideration when determining APZ requirements to minimise the risk from bushfire attack. For existing assets where an APZ might not already exist, but is considered necessary; due consideration shall also be given to the significance of the environmental values and what other methods of bushfire protection might be possible to offer the same performance level of bushfire protection while still protecting the environmental values.

6.30 The provisions of [DI\(G\) ADMIN 40-3](#) apply where there might be an impact on environmental values.

Bushfire management plans

6.31 To maintain a minimum level of consistency of approach to bushfire management and mitigation and fulfil Defence's legal and policy obligations, the following Sections are to be included as a minimum in all BMP:

Section 1—Bushfire Resource Information

Section 2—Bushfire Mitigation Works Program

Section 3—Bushfire Awareness Program

Section 4—Bushfire Response Strategy

Section 5—Bushfire Recovery Requirements

Section 6—Monitoring, Recording and Analysis

Section 7—Reporting

6.32 As a Commonwealth Department, Defence has a responsibility not to take an action that has, will have or is likely to have a significant impact on the environment without approval of the Commonwealth Environment Minister. All BMP are to be developed and implemented in such a way that there will be no significant impact on the environment. If there are activities proposed for inclusion in a BMP that might impact on environmental values that are listed in the EPBC Act, such as threatened species, endangered ecological communities, heritage sites or, Ramsar wetlands, then initial advice on the application of the EPBC Act should be sought from DSG Regional Environmental Officer responsible for the area covered by the BMP. Further advice on Defence's obligations under the EPBC Act provisions is available in [DI\(G\) ADMIN 40-3](#).

6.33 The content of all new BMP is to be reviewed three years after the development of the initial BMP. Where a BMP was in place at the time of this chapter being promulgated, then that plan is to be reviewed within 12 months of this chapter being promulgated and updated as necessary. Thereafter all BMP shall be reviewed and updated as necessary after any bushfire event or at periods not exceeding five years.

6.34 All BMP shall incorporate bushfire fuel reduction strategies that reduce the rate of spread and intensity of bushfires as well as protecting the values of the Defence property.

6.35 All BMP shall incorporate fire regimes designed to provide appropriate and safe areas for the ADF to train.

MINIMUM CONTENTS OF BUSHFIRE MANAGEMENT PLAN SECTIONS

Section 1—Bushfire resource information

6.36 This section is to contain:

- a. information on local fire history, typical fire seasons and weather patterns as well as potential bushfire behaviour;
- b. a list of the asset, landscape and environmental values to be protected in the area(s) covered by the BMP;

- c. the necessary resource information for planning bushfire management and mitigation activities to maintain those values. Where the necessary information is not available, these gaps will be identified and a strategy developed to obtain the information;
- d. a map delineating the different areas of bushfire hazard;
- e. description of appropriate APZ for each asset;
- f. a map showing each of the management units developed for the property, a description of the values being protected in each unit and the management objectives and appropriate fire regime for each unit;
- g. the desired fuel load for each management unit and the appropriate fuel reduction method to reduce fuel loads to required levels in that unit;
- h. assign usage categories to existing fire trails (tankers, light units etc) as well as identify turning and passing points and associated maintenance regimes for each. Given that Defence relies extensively on State/Territory fire fighting resources, or local bushfire brigades, design and maintenance standards specified for the surrounding LGA for fire access trails and water refilling points should be specified as a minimum for the Defence property, wherever appropriate;
- i. a description of the procedure for bushfire fuel load monitoring, data recording and analysis; and
- j. water points and access as well as water supply type (tank, dam, standpipe etc), as well as filling compatibility with surrounding LGA equipment.

Section 2—Bushfire Mitigation Works Schedule

6.37 The Bushfire Mitigation Works Schedule (BMWS) is to be developed for the entire duration of the BMP and shall prescribe the mitigation works required for each year of the BMP. Typically the BMP shall identify tasks such as bushfire fuel reduction, ecological burning and maintenance of fire trails and APZ that need to be undertaken before the upcoming bushfire season. The schedule of works shall be reviewed and updated on an annual basis based on the experience of the previous year.

Section 3—Bushfire Awareness Program

6.38 A Bushfire Awareness Program (BAP) is to be developed to ensure people who use, manage, work on, live on or, live next door to the Defence property covered by the BMP:

- a. are aware of the bushfire risks associated with that property;
- b. know what to do in the case of a bushfire emergency on the property;
- c. are advised of upcoming fuel reduction burns on the property; and
- d. have contact details for questions about bushfire, or reporting bushfire matters relating to the property.

6.39 The BAP should also clearly link with emergency management planning and response procedures developed by the relevant local Defence Emergency Planning Committee (see [Defence Safety Manual](#), volume 1).

Section 4—Bushfire Response Strategy

6.40 As a general rule, any bushfire should be extinguished as soon as possible unless a conscious decision is made not to extinguish the fire immediately and resources are available to manage the event to the desired end point.

6.41 Each Bushfire Management Plan is to contain the Bushfire Response Strategy for the site that as a minimum, shall prescribe the following:

- a. levels of response for each of the different bushfire danger levels declared during the proclaimed bushfire season in the local Government area surrounding the Defence property;

- b. the identification of the person(s) who will fulfil the role of Bushfire Incident Controller who will be responsible for directing the overall bushfire suppression activities;
- c. bushfire detection and reporting arrangements;
- d. command and control arrangements once a bushfire has been reported;
- e. linkages with emergency management planning and response procedures developed by the relevant local Defence Emergency Planning Committee (see *Defence Safety Manual*, volume 1);
- f. identification of a Defence point of contact, familiar with the values of the property covered by the BMP, the contents of the BMP itself and who will be available to provide 'expert local knowledge' to the bushfire Incident Controller. This person shall be contacted as soon as possible after a fire has been detected and make their way to the location where the fire response is being controlled from. It is also recommended that Defence personnel/contractors that might be involved in bushfire fighting are trained to participate in the nationally endorsed Australian Inter-service Incident Management System (AIIMS);
- g. restrictions that the bushfire Incident Controller may need to be aware of (eg essential services or capability requirements, security considerations, unexploded ordnance, use of fire retardants or important environmental values);
- h. the level of bushfire fighting resources available to the bushfire Incident Controller (manpower, equipment, radio frequencies, police, first aid, catering etc);
- i. identify necessary stakeholders and their contact details to be contacted should a bushfire start (eg senior officers, employees/residents, neighbours, local media). This list will also identify a point of contact to manage any media interest during a bushfire event; and
- j. provision of bushfire fighting resources to suppress bushfires outside of Defence properties, in accordance with the provisions of *DI(G) OPS 05-1*.

Section 5—Bushfire Recovery Requirements

6.42 As a minimum requirement, this section shall prescribe the requirements for ensuring that post fire recovery is timely and effective for both bushfires and planned fires. Issues to be considered by this Section shall include the following:

- a. infrastructure or utility assets associated with the burnt area such as fallen or burnt out trees, damaged roads and power lines, fences and implementation of necessary access restrictions;
- b. environmental aspects such as fire break rehabilitation, stabilisation of water courses and possible weed control;
- c. developing a local process for post fire debriefing so that effectiveness of the BMP (and its various sections) can be reviewed and modified where necessary;
- d. the human aspects (counselling, debriefing etc) relating to the people either involved in the fire operations, or perhaps affected by the fire in some way; and
- e. animal welfare issues such as injured stock or wildlife.

Section 6—Monitoring, Recording and Analysis

6.43 This section of the BMP shall describe procedures for:

- a. measuring and recording bushfire fuel loads, analysis of results and modification of the BMWS of the BMP if necessary;
- b. analysing the effectiveness of hazard reduction activities to determine if the desired results have been achieved and if not, development and implementation of strategies to achieve necessary results;

- c. monitor the implementation of the BMWS and make any adjustments to the annual mitigation works program that might be necessary after a bushfire event;
- d. recording the following information (as a minimum) after each bushfire, or fuel reduction burn:
 - (1) date and time fire started;
 - (2) date and time fire extinguished (excluding mop-up);
 - (3) vegetation type;
 - (4) weather conditions (temp, wind speed and direction, humidity etc);
 - (5) boundary of burnt area and an estimation of area burnt; and
 - (6) ignition type and location.
- e. gathering information that is necessary to enable estimations of fire intensity;
- f. analysing the bushfire event to determine the effectiveness of bushfire management and mitigation prescriptions in the BMP and consider changes as necessary; and
- g. monitoring the progress of rehabilitation works undertaken after a bushfire event and prescribe additional works that might become necessary.

6.44 This section shall also identify the person responsible for ensuring the necessary monitoring reporting and analysis is undertaken.

Section 7—Reporting

6.45 Each Group or Service responsible for implementing the provisions of this chapter will document in the BMP:

- a. The person responsible for completing the National reporting requirements of [chapter 1](#) of the MFPE.
- b. Local reporting requirements and the position responsible for completing the same; and

6.46 All bushfire events are to be reported in accordance with [chapter 1](#).

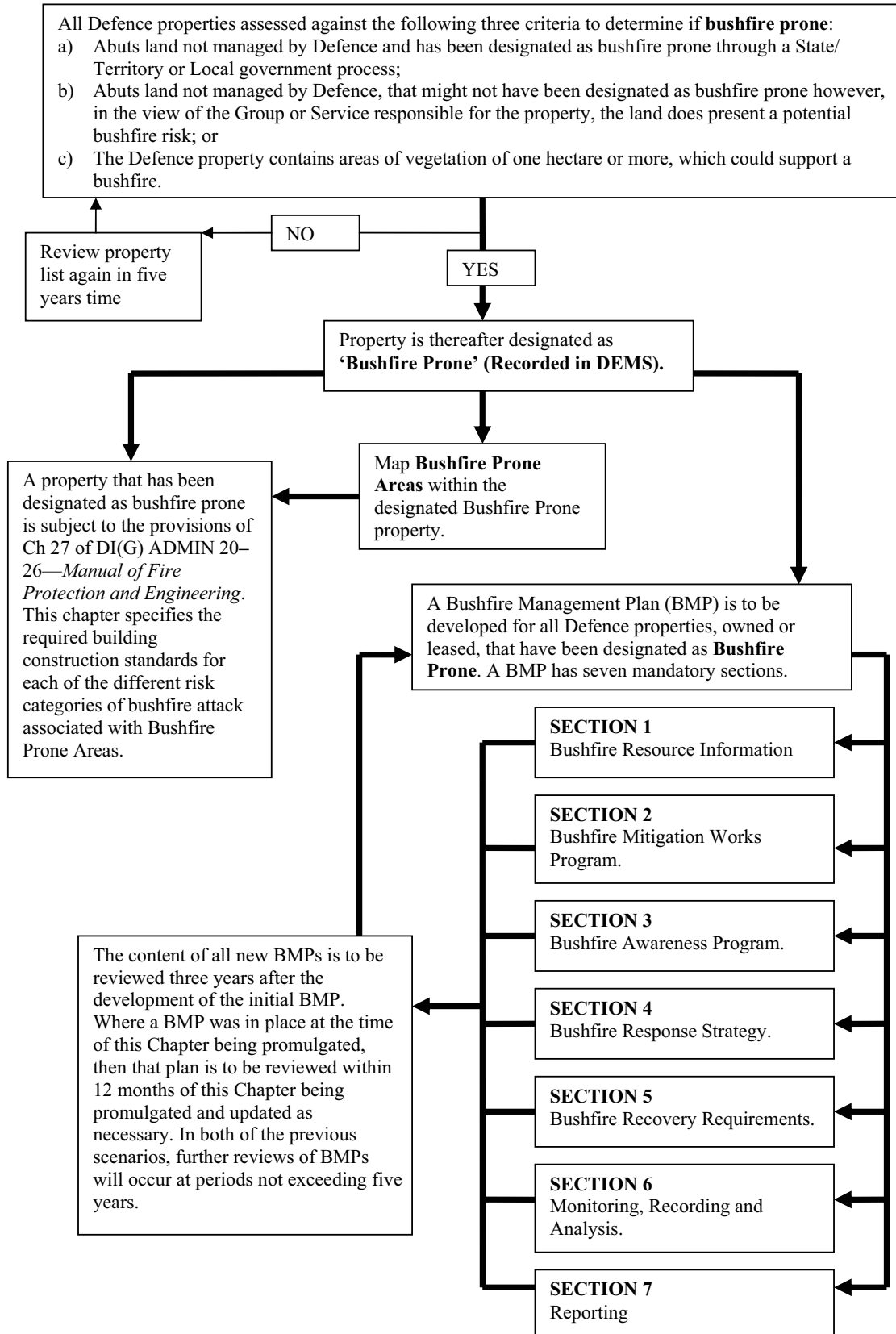
6.47 All planned fire events are to be reported in accordance with local requirements.

Annex:

- A. [Bushfire management plan](#)

BUSHFIRE MANAGEMENT PLAN

Decision Tree for Determining if a Property is Bushfire Prone and Determining if Construction Standards Apply and a Bushfire management Plan is Necessary.



CHAPTER 7

ACCEPTANCE OF DESIGN AND CONSTRUCTION

Scope

7.1 The scope of this chapter is to define Defence specific requirements for design and construction of passive and active fire protection measures.

Aim

7.2 The aim of this chapter is to ensure quality commercial products are identified and used in Defence projects.

Reference

7.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA).
- b. *ActivFire Register of Fire Protection Equipment* (see www.activfire.gov.au).

Requirements

7.4 Passive and active fire protection measures must be installed in an appropriate manner to achieve the requirements of the BCA and Manual of Fire Protection Engineering, using materials that are fit for the purpose for which they are intended.

7.5 To guarantee that fire protection equipment of recognised quality is installed in Defence facilities, compliance with part A2, section A2.2 of the BCA is required for passive and active systems. For active system, equipment provided by manufacturers is to be listed in the *ActivFire Register of Fire Protection Equipment*. A statement to this effect shall be included in design briefs.

Defect reporting procedure

7.6 Where the performance of any item listed in the *ActivFire Register of Fire Protection Equipment* is found to be deficient, unsatisfactory or sub-standard in anyway, a report is to be forwarded to Director Estate Engineering Policy, so that necessary action can be taken on a Defence wide basis.

Special Service requirements

7.7 The contents of this chapter are not applicable where the Services have equipment requirements that have unique operational applications requiring fire protection equipment which are not on the *ActivFire Register of Fire Protection Equipment*.

CHAPTER 8

AIRCRAFT HANGARS

Scope

8.1 This chapter details the Defence policy for passive and active fire safety measures for aircraft *Hangars*.

Aim

8.2 The aim of this chapter is to detail appropriate levels of fire protection for *Hangars* to safeguard life, protect valuable Defence assets and maintain Defence operational capability in the event of fire, by limiting the impact of fire damage to aircraft, *Hangars* and ancillary facilities.

References

8.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA).
- b. Defence Security Manual.
- c. National Fire Protection Association (NFPA) 11—Standard for Low-, Medium-, and High-Expansion Foam.
- d. Australian Standard (AS) 1670.1–2004—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire*.
- e. AS 2118.1—*Automatic Fire Sprinkler Systems—General Requirements*.
- f. AS 2419.1—*Fire Hydrant Installations—System Design, Installation and Commissioning*.
- g. AS 2441—*Installation of Fire Hose Reels*.
- h. AS 2444—*Portable Fire Extinguishers and Fire Blankets—Selection and Location*.
- i. AS 2665—*Smoke/Heat Venting Systems—Design, Installation and Commissioning*.
- j. AS 4806—*Closed Circuit Television (CCTV)*.
- k. AS/New Zealand Standard (AS/NZS) 1668.1—*The use of ventilation and airconditioning in buildings—Fire and smoke control in multi-compartment buildings*.
- l. AS/NZS 60079.10.1—*Explosive atmospheres—Classification of areas—Explosive gas atmospheres*.

Principles

8.4 Protection of aircraft is achieved by a combination of fire prevention, fire compartmentation, fire suppression, automatic smoke detection and ventilation. Criteria to be used for selecting a level of fire protection for *Hangars* have been developed and are detailed in the following paragraphs.

8.5 Passive and active fire safety measures for *Hangars* are to be based on principles which:

- a. minimise spread of fuel spills,
- b. detect a fire in its incipient stage,
- c. control a fire in the shortest possible time,
- d. minimise damage to aircraft and equipment,

- e. minimise disruption to the aircraft *Hangar* operations, and
- f. minimise the incidence of false alarms.

Fire protection selection criteria

8.6 The level of fixed fire protection for *Hangars* is based on the following:

- a. the assessed risk (multiple or single aircraft);
- b. Defence operational capability and strategic value; and
- c. the response time and capability of the responding fire brigade.

Level of protection for hangars

8.7 An assessment of the level of fire protection is required for all new *Hangars*. To facilitate the assessment process and to formally record its conclusions, the Form at annex A shall be completed. annex B specifies the passive and active fire safety requirements having regard to the assessment undertaken in annex A. The regime of fire protection has four escalating levels summarised as follows:

- a. **Level 1.** Level 1 incorporates all BCA fire safety protection requirements and also includes first attack appliances including hose reels, foam making equipment and portable extinguishers. Level 1 is the minimum requirement for any *Hangar* housing aircraft.
- b. **Level 2.** Level 2 incorporates level 1 protection plus two types of fire detection, an emergency warning system, smoke/heat vents and draught curtains or mechanical smoke exhaust.
- c. **Level 3.** Level 3 incorporates levels 1 and 2 protection plus the provision of a foam suppression system.
- d. **Level 4.** Level 4 incorporates levels 1, 2 and 3 plus a closed circuit television system.

8.8 Project Directors are responsible for ensuring the process at annex A has been completed for all new projects, *Substantial Alterations* and where there is a *Change-in-Building* use. The completed Level of Protection for *Hangars* Form shall be part of the design documentation for the building. Project Directors are responsible to ensure the process has been completed and the form is attached to the structure in DEMS prior to building handover.

8.9 The process at annex A is also required for existing *Hangars* that have not had a previous assessment or where the strategic value of the aircraft has changed. Where this occurs, the DSO Regional Director is to ensure that the User Representative completes the Level of Protection for *Hangars* Form at annex A. The DSO Regional Director must ensure that the form is attached to the structure in DEMS.

PASSIVE FIRE PROTECTION MEASURES

Hangar construction and separation

8.10 Where *Hangar* facilities are required for more than one aircraft and real estate permits, housing each aircraft separately is required to negate the need for fixed fire suppression systems. This approach is the Defence preferred design option.

8.11 *Hangar Aircraft Areas* without a foam suppression system (refer to [paragraph 8.21](#)) that contain two or more fuelled aircraft must have passive fire separation between each aircraft. The fire resistance level of the separation is to comply with the fire wall requirements for the relevant BCA type of construction for the building.

8.12 *Hangars* that house one or more defuelled aircraft, or one fuelled aircraft only, are not required to have fire separation or foam suppression but shall have Level 1 or 2 (refer to annex B) fire protection installed. These *Hangars* shall have signage saying 'THIS HANGAR SHALL HOUSE DEFUELED AIRCRAFT OR ONE FUELLED AIRCRAFT ONLY' in 50 mm high capital lettering in a colour contrasting with that of the background. A minimum of two signs shall be located in clearly visible locations.

8.13 *Hangar Open Shelters* must comply with the relevant requirements of the BCA and are also required to achieve the requirements for level 1 protection as defined in [paragraph 8.7](#).

Compartmentation

8.14 *Hangar Annexes* shall be fire separated from the *Hangar Aircraft Areas*. The fire separation shall be in accordance with Part C of the BCA for fire walls and the fire resistance levels applicable for the type of construction required for the building.

Floor drainage

8.15 A floor drainage system incorporating flame traps is to be provided in the *Hangars* area to control the flow of spilt fuel. The drainage system must be designed such that the *Hangar* door tracks and *Hangar* walls remain clear of flammable liquids. The drainage system shall be of sufficient capacity to ensure that the foam is contained and uncontrolled discharge to stormwater or sewerage systems is prevented in accordance with 'Guidelines for Testing Fixed Aqueous Film Forming Fire Protection System' located on the IM website. The floor gradient shall be not less than 0.5 per cent and shall incorporate the requirement for floor drainage away from *Hangar Aircraft Area*.

8.16 *Hangar Aircraft Areas* that allow for fuelled aircraft shall incorporate floor drainage systems with appropriate floor drains that are strategically located within the aircraft area to reduce fuel pool size, potential fire severity and risk to aircraft. The floor drains shall incorporate monitored hydrocarbon detectors installed and configured to raise an alarm and initiate an appropriate response.

Hangar door operation

8.17 At least one leaf of any *Hangar* door system is to be openable from the outside. The openable leaf is to be provided with a towing lug for emergency movement of the doors by vehicle or by hand.

Separation of aircraft

8.18 A minimum separation distance between aircraft within a *Hangar* shall be determined to minimise the risk of radiated heat from one burning aircraft, damaging adjacent aircraft and to facilitate extraction of aircraft from a *Hangar* if a fire occurs. The selection of an appropriate separation distance between aircraft is dependent on an evaluation of the following criteria:

- a. the strategic value of the aircraft;
- b. the type of aircraft housed (rotary/fixed wing);
- c. the configuration of the aircraft housed (stripped to air frame, with/without wings, wings/rotors extended/folded etc);
- d. aircraft fuelled/defuelled;
- e. type of installed detection/suppression;
- f. response time and capability of the fire brigade; and
- g. the ease with which aircraft can be extracted.

Although increased separation distances may be imposed on a case by case basis after consideration of the above factors, a minimum separation distance between aircraft of four metres shall be maintained.

ACTIVE FIRE PROTECTION MEASURES

Fire detection

8.19 *Hangars* are required to have fire detection and alarm systems as per the requirements of the BCA. In *Hangar Aircraft Areas*, where the process at annex A has determined the level of protection to be Levels 2–4, two separate means of fire detection shall be provided as follows:

- a. smoke detection; and
- b. flame detection.

Fire suppression

8.20 The deemed-to-satisfy provisions of table E1.5 of the BCA require sprinkler protection for aircraft *Hangars* that have a compartment area and volume exceeding 2000 m² or 12 000 m³. In *Hangar Aircraft Areas*, where foam systems are required or installed in accordance with the Manual of Fire Protection Engineering, the BCA requirement for sprinklers is to be further assessed. If sprinklers are deleted through the design process, an *Alternative Solution* and the process detailed at [chapter 26—‘Alternative design solutions, dispensations and certification for defence projects’](#) is to be completed.

8.21 Where foam suppression systems are provided, the method of installation is to be in accordance with the requirements of subparagraph 8.3c. They shall be designed to provide rapid knockdown of a fuel spill fire. This may be achieved by either of the following methods:

- a. low level foam systems such as pop-up sprinklers;
- b. oscillating foam monitors;
- c. overhead high velocity foam deluge systems; or
- d. a combination of the above.

8.22 When oscillating foam monitors or an overhead foam deluge system is specified, the following points must be considered:

- a. the detrimental effects of firefighting foam on aircraft avionics and components;
- b. the down time required for clean up after a discharge;
- c. the increased water storage requirement; and
- d. the additional firefighting foam to be contained and disposed of after a discharge.

8.23 In *Hangar Aircraft Areas*, the operation of a single detection type shall not cause the activation of the foam suppression system. In automatic mode, the foam system shall only operate on activation of a fire alarm from both the smoke and flame detection systems.

8.24 When the *Hangar Aircraft Area* is manned, the automatic operation of the suppression system shall be isolated and manual operation selected. When unmanned, the automatic mode must always be selected. This sequence, personnel training and the requirements for manual operation of the foam suppression system must be incorporated into the Standard Operating Procedures for the *Hangar*.

8.25 The control that changes the status of the foam suppression system between automatic and manual modes shall be secured in such a manner that prevents unauthorised interference.

Firefighting foam

8.26 The type of firefighting foam to be used in Defence foam suppression systems shall be as follows:

- a. Defence aqueous film-forming foam (AFFF) stocks shall be used in existing suppression systems subject to compliance with ‘Guidelines for Testing Fixed Aqueous Film Forming Fire Protection System’—refer to fire protection section on <http://www.defence.gov.au/im/policy/technical/technical.htm>.

- b. The fire suppression foam purchased to operate existing Defence suppression systems shall not contain any perfluorooctanyl sulfonate (PFOS) chemicals. Any new foam purchased shall be compatible with existing installations and shall not adversely affect or diminish the firefighting performance of existing suppression systems.
- c. New Defence suppression systems shall use firefighting foams that do not contain any PFOS chemicals. The suppression systems shall be designed to deliver the required performance using the alternative firefighting foam.

Water supply for foam suppression systems

8.27 The water supply for a foam suppression system shall have the reliability of a Grade 1 supply, in accordance with the requirements of subparagraph 8.3e.

8.28 The water supply shall be sufficient to operate the foam zone in alarm and all immediately adjacent foam zones, for a minimum of 10 minutes. The water supply must then be able to supply a further 20 minutes of water from those zones. The full 30 minutes must be at the pressure and flow that meet the requirements of the system design.

Commissioning and maintenance requirements for foam suppression systems

8.29 The commissioning of foam suppression systems shall include the physical testing of all possible combinations of detection circuits (smoke and flame) to ensure that only the designed circuits (one smoke and one flame in foam zone of fire source) operate the automatic foam suppression sequence. Care must be taken to ensure that two or more smoke detection circuits or two or more flame detection circuits do not initiate a foam discharge. Detailed commissioning requirements and maintenance tests to confirm system design parameters are provided in Guidelines for Testing Fixed Aqueous Film Forming Fire Protection System' and NFPA Code 11.

Fire points

8.30 Fire points are to be established within *Hangar Aircraft Areas* and are to be located with fire hose reels. The fire point shall consist of a fire hose reel, portable fire extinguishers, foam liquid proportioners and/or a foam making branch and foam. Where an automatic foam suppression system is installed, the fire point shall also incorporate the manual foam control panels for operation of the suppression system.

Smoke ventilation/exhaust

8.31 Smoke ventilation/exhaust is to be provided for *Hangars* as required by the BCA. Where the BCA does not require any form of smoke management, smoke/heat vents and draught curtains or mechanical smoke extraction shall be installed in *Hangar Aircraft Areas* over 1500 m². The method of installation is to be in accordance with the requirements of subparagraph 8.3i. (including the requirements for draught curtains and inlet ventilation) or subparagraph 8.3k. for mechanical smoke control. Automatic operation of either the smoke ventilation or exhaust shall be initiated by the detection or suppression system. Where vents are provided, they shall open as one.

8.32 Where manual control of vents is provided for temperature control in *Hangar Aircraft Areas* with conventional closed head sprinkler systems, the system shall be designed so that an alarm from the fire detection system shall override the manual control and close the vents so that sufficient heat build up will occur to operate the sprinkler system. The vents shall reopen once the sprinkler system has operated.

Closed Circuit Television

8.33 Where a *Hangar* requires level 4 protection (refer to [paragraph 8.7](#)) a closed circuit television system shall be installed. The installation shall comply with subparagraph 8.3j. The preferred option is for the system to be monitored by the responding Defence fire service.

Fire hydrants

8.34 The requirements of the BCA for hydrant coverage are to be met. Primary coverage is to be achieved through an external hydrant system. Hydrants must be accessible from the *Aircraft Hangar Area*. External hydrants in aircraft movement areas shall be of the in-ground type.

Annexes:

- A. [Level of protection for hangars form](#)
- B. [Fire safety requirements in hangars](#)

LEVEL OF PROTECTION FOR HANGARS FORM

DSG Region:		Establishment:	
Building No:		Building Name:	
Protection Level	Design and Function of Facility	User Representative (minimum two-star rank)	
1	Is the <i>Hangar</i> for the storage of single defueled aircraft only?	YES/NO	
	Is the aircraft stored in a <i>Hangar Open Shelter</i> .	YES/NO	
2	Is the <i>Hangar</i> for the storage of more than one defueled aircraft or one fuelled aircraft only?	YES/NO	
3	Is the <i>Hangar</i> for the storage of more than one fuelled aircraft?	YES/NO	
	Is the <i>Hangar</i> for the storage of one or more aircraft, the loss of which would severely impact Defence Capability and National Security point of view?	YES/NO	
4	Would CCTV monitoring of the multiple fuelled aircraft or single strategic aircraft nominated in level 3 significantly enhance the fire service response?	YES/NO	
		User representative	
		Service/Group	
		Name	
		Position/Rank	
		Signature	
		Date	

Notes:

1. The levels range from 1–4. Level 1 has the least fire safety requirements and Level 4 has the most stringent requirements. All questions must be completed.
2. The user group representative is to complete this form. The method is to answer the yes/no questions starting at level 1. The last 'yes' answer to a question determines the fire protection level. For example, if the answer at level 2 is yes and the answer to level 3 is no, then the *Hangar* will require level 2 protection.
3. If either answer in level 3 is 'yes', then this is the minimum required level of protection.
4. Level 4 is only applicable if level 3 has a 'yes' response.

FIRE SAFETY REQUIREMENTS IN HANGARS

FIRE SAFETY COMPONENTS	LEVEL OF PROTECTION—REFER ANNEX A				
	1	2	3	4	Notes
Fire compartmentation (FRL of fire walls between <i>Hangar Aircraft Area</i> and <i>Hangar Annex</i> to BCA requirements for relevant type of construction)	X	X	X	X	
Floor drainage	X	X	X	X	
<i>Hangar</i> door operation	X	X	X	X	
Electrical services protection in hazardous areas	X	X	X	X	
Portable fire-extinguishers	X	X	X	X	
Fire hose reels	X	X	X	X	
Foam liquid proportioners or foam making equipment	X	X	X	X	
Fire hydrants	X	X	X	X	
Flame detectors		X	X	X	
Smoke detectors		X	X	X	
Evacuation alarm system		X	X	X	
Smoke/heat release vents or mechanical smoke exhaust		X	X	X	
Fire compartmentation of aircraft (FRL of fire walls to BCA requirements for relevant type of construction)			X	X	1
Low level suppression system (pop-up foam system)			X	X	2
Oscillating foam monitors			X	X	2
Overhead suppression (water/foam)			X	X	2
Closed circuit television				X	

Notes:

1. Fire compartmentation between aircraft is the Defence preferred option for level 3 protection. When provided, foam suppression systems are not required.
2. High level or low level foam suppression may be selected individually or in combination depending on the contents of the *Hangar*. This is a requirement for level 3 protection when aircraft are not contained in individual fire compartments.

CHAPTER 9

STORES BUILDINGS

Scope

9.1 This chapter applies to *New Construction*, leased buildings, *Substantial Alteration* or *Change-in-Use* of Defence occupied *Stores Buildings* and also specifies particular Manual of Fire Protection Engineering requirements for existing *Stores buildings*. The specific requirements for specialised storages such as explosives, radioactive substances and flammable liquids are not covered in this chapter.

Aim

9.2 The aim of this chapter is to detail appropriate levels of fire protection for *Stores Buildings* to safeguard life, protect valuable Defence assets and maintain Defence operational capability in the event of fire, by limiting the impact of fire damage to *Stores Buildings* and their contents.

References

9.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA);
- b. Australian Standards (AS) 2118—*Automatic Fire Sprinkler Systems (suite of standards)*;
- c. AS 1670.1—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire*;
- d. AS 2665—*Smoke and heat venting systems—Design, installation and commissioning*; and
- e. AS/New Zealand Standard 1668.1—*The use of ventilation and air-conditioning in buildings—Fire and smoke control in multi-compartment buildings*.

PASSIVE FIRE PROTECTION MEASURES

Construction

9.4 The type of fire-resisting construction for new *Stores Buildings* shall be, as a minimum, in accordance with the requirements of the BCA based on its use, area, volume and rise in storeys.

9.5 Passive fire protection measures for new *Stores Buildings* are to be assessed for the purpose of restricting the spread of fire within the facility. Where critical and/or high value stores meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1, a risk management strategy is to be developed and referred to the Director Estate Engineering Policy for approval.

ACTIVE FIRE PROTECTION MEASURES

Fire detection

9.6 New *Stores Buildings* are required to have fire detection and alarm systems as per the requirements of the BCA.

Fire suppression

9.7 Sprinklers shall be installed in all new *Stores Buildings* in accordance with the requirements of the BCA. In addition, where not required by the BCA, sprinklers must be provided in new or existing *Stores Buildings* when the contents meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1.

Ventilation

9.8 Smoke ventilation/exhaust is to be provided to new *Stores Buildings* to the requirements of the BCA. Where the BCA does not require any form of smoke management, smoke/heat vents and draught curtains or mechanical smoke extraction shall be installed in fire compartments over 1500 m² when the contents meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1. This requirement applies to new or existing *Stores Buildings*. The method of installation is to be in accordance with the requirements of subparagraph 9.3e. (including the requirements for draught curtains and inlet ventilation) or subparagraph for mechanical smoke control. Automatic operation of either the smoke ventilation or exhaust shall be initiated by the detection or suppression system. Where vents are provided, they shall open as one.

9.9 Where manual control of vents is provided for temperature control in *Stores Buildings* with conventional closed head sprinkler systems, the system shall be designed so that an alarm from the fire detection system shall override the manual control and close the vents so that sufficient heat build up will occur to activate the sprinkler system. The vents shall reopen once the sprinkler system has activated.

Emergency warning systems

9.10 A Building Occupant Warning System (BOWS) is to be installed in *Stores Buildings* when required by the BCA. This requirement also applies to existing buildings with either a fire detection system or sprinkler system installed. All new BOWS shall be installed in accordance with the BCA and AS 1670.1 and the requirements in [chapter 3—'Building emergency warning systems'](#).

CHAPTER 10

WORKSHOPS

Scope

10.1 This chapter applies to *New Construction*, leased buildings, *Substantial Alteration* or *Change-in-Use* of Defence occupied *Workshops* and also specifies particular MFPE requirements for existing *Workshops*.

Aim

10.2 The aim of this chapter is to detail appropriate levels of fire protection for *Workshops* to safeguard life, protect valuable Defence assets and processes that maintain Defence operational capability in the event of fire, by limiting the impact of fire damage to *Workshops* and their contents.

References

10.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA);
- b. Australian Standard (AS) 2118—Automatic Fire Sprinkler Systems (suite of standards);
- c. AS 1670.1—*Fire detection, warning, control and intercom systems—System design, installation and commissioning—Fire*;
- d. AS 2665—*Smoke and Heat Venting Systems—Design, Installation and Commissioning*;
- e. AS/New Zealand Standard (AS/NZS) 1668.1—*The use of ventilation and air-conditioning in buildings—Fire and smoke control in multi-compartment buildings*; and
- f. AS/NZS 60079.10.1—*Explosive atmospheres—Classification of areas—Explosive gas atmospheres*.

PASSIVE FIRE PROTECTION MEASURES

Construction

10.4 The type of fire-resisting construction for new *Workshops* shall be, as a minimum, in accordance with the requirements of the BCA based on its use, area, volume and rise in storeys.

10.5 Passive fire protection measures for new *Workshops* are to be assessed for the purpose of restricting the spread of fire within the facility. Where critical and/or high value stores meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1, a risk management strategy is to be developed and referred to the Director Estate Engineering Policy for approval.

ACTIVE FIRE PROTECTION MEASURES

Fire detection

10.6 New *Workshops* are required to have fire detection and alarm systems as per the requirements of the BCA.

Fire suppression

10.7 Sprinklers shall be installed in all new *Workshops* in accordance with the requirements of the BCA. In addition, where not required by the BCA, sprinklers must be provided in new or existing *Workshops* when the contents or processes meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1.

Ventilation

10.8 Smoke ventilation/exhaust is to be provided to new *Workshops* to the requirements of the BCA. Where the BCA does not require any form of smoke management, smoke/heat vents and draught curtains or mechanical smoke extraction shall be installed in new or existing *Workshops* with fire compartments over 1500 m² when the contents meet the definition of Major Assets or Important Assets as detailed in [paragraph 1.22](#) in chapter 1. The method of installation is to be in accordance with the requirements of subparagraph 10.3d. (including the requirements for draught curtains and inlet ventilation) or subparagraph 10.3e. for mechanical smoke control. Automatic operation of either the smoke ventilation or exhaust shall be initiated by the detection or suppression system. Where vents are provided, they shall open as one.

10.9 Where manual control of vents is provided for temperature control in *Workshops* with conventional closed head sprinkler systems, the system shall be designed so that an alarm from the fire detection system shall override the manual control and close the vents so that sufficient heat build up will occur to activate the sprinkler system. The vents shall reopen once the sprinkler system has activated.

Emergency warning systems

10.10 A Building Occupant Warning System (BOWS) is to be installed in *Workshops* when required by the BCA. This requirement also applies to existing buildings with either a fire detection system or sprinkler system installed. All new BOWS shall be installed in accordance with the BCA and AS 1670.1 and the requirements in [chapter 3—'Building emergency warning systems'](#).

CHAPTER 11

PORTABLE FIRE EXTINGUISHERS AND FIRE BLANKETS

Scope

11.1 This chapter applies to the selection and installation of portable fire extinguishers and fire blankets in Defence facilities.

Aim

11.2 The aim of this chapter is to provide Defence specific requirements for the selection and location of portable fire extinguishers and fire blankets within Defence facilities. This guidance is used to provide appropriate extinguishing mediums for different fire risks, in order to assist in first-attack firefighting and to limit the impact of fire on Defence assets and personnel.

References

11.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA);
- b. Australian Standard (AS) 1940—*The Storage and Handling of Flammable and Combustible Liquids*;
- c. AS 2444—*Portable Fire Extinguishers and Fire Blankets—Selection and Location*; and
- d. AS/New Zealand Standard (AS/NZS) 2243.8—*Safety in laboratories—Fume cupboards*.

Distribution

11.4 Portable fire extinguishers are required to be installed in all buildings in accordance with the requirements of the BCA. In addition, portable fire extinguishers shall be provided in the following specific locations:

- a. areas containing flammable or combustible liquids as required by AS 1940 (refer to subparagraph 11.3b.);
- b. class 1b buildings are to be provided with portable fire extinguishers as if they were class 2–9 buildings as per the requirements of table E1.6 of the BCA;
- c. special hazards. As required by Dangerous goods or WorkCover legislation;
- d. areas containing fume cupboards as required by AS/NZS 2243.8 (refer to subparagraph 11.3b.); and
- e. electrical substations.

11.5 The provision of a fixed automatic suppression system such as a gaseous total flooding system does not reduce the requirement for portable extinguishers.

Location of extinguishers

11.6 General guidelines are:

- a. If only one extinguisher is to be provided it should be on the inside wall adjacent to the normal access/egress door to the installation.
- b. If more than one extinguisher is required they should be located, in order of preference:
 - (1) on an inside wall adjacent to normal access/egress door;
 - (2) on an inside wall adjacent to alternative access/exit doors;

- (3) on inside walls to maintain the required travel distance; and
- (4) on the wall outside the main entry door, where they should be suitably protected against weather, theft and vandalism.

Selection of extinguishers

11.7 Only portable fire equipment listed in the ACTIVFIRE—Register of Accredited Fire Protection Equipment (refer [chapter 7—'Acceptance of design and construction'](#)) are to be installed in Defence-owned buildings.

11.8 Where fire hose reels are provided, water extinguishers are not required.

Fire blankets

11.9 Fire blankets are to be provided in all buildings containing commercial kitchens that use cooking oils and fats. The installation and location is to be in accordance with the location requirements of AS 2444.

CHAPTER 12

COMPUTING EQUIPMENT—FIRE PROTECTION

12.1 This chapter is deleted and reserved. Fire protection requirements for facilities containing Computing Equipment need to be assessed based on asset classification ([chapter 1—‘Fire Protection of Defence assets’](#)) and/or criticality ([chapter 20—‘Critical equipment and facilities—fire protection’](#)).

CHAPTER 13

FIRE SAFETY SURVEYS—DEFENCE ASSETS

Scope

13.1 This Chapter details the purpose and requirements for completing fire safety surveys for Department of Defence assets.

Aim

13.2 The aim of this chapter is to detail the technical and administrative requirements for the conduct of fire safety surveys on Defence owned, non-Defence owned buildings containing Defence assets and leased facilities.

Background

13.3 The level of fire safety in Defence facilities must be sufficient for Defence to meet its Occupational Health and Safety and duty of care obligations whilst also ensuring that Defence assets remain adequately protected. Fire safety surveys are an important auditing tool for Defence to determine whether the levels of occupant safety and asset protection of existing Defence facilities are adequate. Surveys shall be based on the Manual of Fire Protection Engineering (MFPE) and the fire safety provisions of the current Building Code of Australia (BCA).

Note. Refer to [paragraph 13.12](#) for recommendations in relation to issues identified regarding compliance with the current BCA in existing buildings.

13.4 Fire safety surveys review the building fire safety measures to determine if they are fit for purpose and maintained as required. Occupant safety and asset protection issues of a more general nature are also identified as part of the survey process. The surveys are a walk-through visual inspection, however, access to roof and floor spaces may be required to determine compliance or otherwise of fire safety provisions. Functional testing of fire systems and equipment is the responsibility of the Comprehensive Maintenance Services (CMS) contractor and is not part of a routine survey, however, scrutiny of maintenance documentation is required.

Responsibilities for fire safety surveys

13.5 Defence Support Group (DSG) Regional Directors are responsible for ensuring that fire safety surveys of facilities are undertaken in accordance with the frequencies specified in [paragraph 13.14](#) and for ensuring all identified corrective works are actioned.

13.6 DSG Regional Fire Safety Officers (FSO) are responsible for managing a program to maintain currency of fire safety surveys, identifying necessary funding where fire safety surveys are outsourced, actioning of recommendations provided by consultants and for the coordination of fire safety surveys that are in progress.

Authorised to conduct fire safety surveys

13.7 DSG Regional FSO with a minimum qualification of Diploma in Fire Technology or equivalent are authorised to conduct fire safety surveys for the Department of Defence.

13.8 Fire safety surveys can be carried out by consultants from the Defence Infrastructure Panel—Fire Safety Survey, or by individual consultants determined to be suitable and authorised in writing by Director Estate Engineering Policy (DEEP). In all cases, these consultants are to be directly engaged and managed by Defence personnel. CMS contractors shall not be involved in the procurement and management of consultants undertaking fire safety surveys due to the potential conflict of interest in the audit of Defence buildings and facilities.

Classification of assets

13.9 The level of fire protection required in a Defence installation depends upon the perceived life risk posed, Defence value, the vulnerability of the asset and its contents to fire and explosion as well as building compliance requirements. The Defence value is an aggregate of the replacement cost, the penalties of lead time and availability, the security classification and the impact of loss on the capabilities of the Services. Classifications are in accordance with the DSG Contribution Factor of Defence Estate Assets and are detailed at chapter 1, [annex A](#). To facilitate the asset classification process and to formally record its conclusions, the Asset Classification Matrix of chapter 1, [annex A](#) shall be used. Refer to [paragraphs 1.23](#) and [1.24](#) of chapter 1 for responsibilities for completion of these forms.

Fire safety survey report structure and guidance

13.10 To achieve national consistency, the standard reporting format detailed at annex A shall be adopted and shall not be altered. Annex B provides instruction for fire safety survey report inputs. Any suggested changes are to be referred to DEEP.

Fire safety survey recommendations

13.11 The requirements of the MFPE are mandatory unless provided with a dispensation as per [chapter 26—‘Alternative design solutions, dispensations and certification for defence projects’](#).

13.12 It is not the intent of the fire safety survey process to require existing buildings to be upgraded for the sole purpose of compliance with the current BCA and Australian standards. Priority ratings (P1–P5) are detailed at annex B. Recommendations to upgrade the level of fire protection to comply with current building regulations and standards are P4 unless the recommendation refers to issues that are inadequate for life safety or asset protection and where this occurs a P1–P3 priority shall be assigned. P4 recommendations require no further action and are addressed when the building has major alterations or is refurbished. P5 recommendations are related to the maintenance of fire systems and equipment.

13.13 Recommendations are to be monitored and an auditable trail of actions regarding recommendations maintained by the FSO.

Frequency of fire safety surveys

13.14 The frequency of fire safety surveys shall be determined and recorded against the structure in DEMS by the FSO. Defence assets subject to a fire safety survey requirement shall be inspected at least once in every three year period. The following inspection frequencies are recommended:

a.	Major Assets (MA)	Annually
b.	Important Assets (IA)	Three yearly
c.	Support Assets (SA)	Three yearly
d.	General Purpose Assets (GPA)	Three yearly
e.	Low Importance Assets (LIA)	Three yearly

Note. Married quarters are excluded and some Low Importance Assets as determined by the FSO may also be excluded from the reporting procedures detailed in this chapter.

Retention of fire safety survey reports

13.15 All copies of survey reports shall be kept on the DEMS against the respective structures.

Security of information

13.16 Security of information relating to Defence establishment facilities, equipments and functions must be considered by authorised inspecting staff. Therefore, rather than giving a detailed description of the contents of a facility the abbreviations as shown in [paragraph 13.14](#) shall be used to describe the contents in all cases.

Note. Fire Safety Survey Guidelines are available on the Infrastructure Management website (see <http://www.defence.gov.au/IM/policy/technical/technical.htm>).

Annexes:

- A. [Fire safety survey report](#)
- B. [Report recommendations—instructions](#)

FIRE SAFETY SURVEY REPORT**Report Summary**

DSG Region:	Building No:	File No:
Establishment:	Date of Survey:	

USERS	
Program	
Unit	
Contact	
Phone	
Email	

Table 1

OCCUPANCY	
Building function	
Asset Classification Form completed (MFPE Chapter 1, Annex A)	Yes/No
Criticality Assessment Form completed (MFPE Chapter 1, Annex A)	Yes/No
Asset classification	MA / IA / SA / GPA / LIA
Year of construction	
Approximate internal building floor area	m ²
Has occupancy classification or the usage of the building changed since last survey	Yes/No/NA
If yes, has any change of occupancy/usage been approved by Regional Defence Support Operations (DSO)	Yes/No/NA
If yes, has a certificate of occupancy or equivalent been provided	Yes/No/NA
Are there any available fire safety related alternative solutions / dispensations. If yes, survey to include assessment of maintenance requirements in 'Report Checklist' at page 13A-3	Yes/No
Date of last survey	Month/Year or NA
Frequency of survey	12 / 24 / 36 months

Table 2

CHARACTERISTIC		DESCRIPTION
BCA classification(s)		
Type of construction		Type A/B/C or NA
Large-isolated building		Yes/No
Number of floors	Above ground	
	Below ground	

Table 3

FIRE SAFETY SURVEY RESULTS					
Recommendations from previous survey by status		Outstanding recommendations from previous survey by status		Recommendations from current survey by status	
XX		XX		XX	
U		U		U	
GS		GS		GS	

Table 4

SURVEY RESULTS SUMMARY						
Overall current survey status			S	GS	U	XX
Date of next fire safety survey			Month/Year			

Table 5

INSPECTING OFFICER			
Name			
Company			
Position			
Authorised to conduct fire safety surveys	Yes/No	AIBS Accreditation N ^o	EEPD file reference
Company telephone			
Company email			
I have inspected the building and found it to be substantially in accordance with the findings noted in this fire safety survey report.		Signature	
Date			

Table 6

Notes:

- The details of the point of contact for the fire safety survey are to be provided in Table 1.
- When the fire safety survey is outsourced, the information required to populate Table 2 is to be provided by Defence as part of the tender documentation.
- A description of the original use and certification of the building is to be given in Table 2. The reference to floor area in this table is to be the internal measurement available in DEMS that includes all room floor areas within the building and excludes the building fabric. It is noted that this is not a BCA defined measurement of areas.
- The building characteristics are to be described in Table 3.
- The previous, current and outstanding fire safety survey recommendations are to be provided in Table 4. The outstanding column in this table is to list the recommendations that have not been completed from the previous fire safety survey report.
- The status of the current fire safety survey is to be shown in Table 5.
- The details of the inspecting officer are to be provided in Table 6.

REPORT RECOMMENDATIONS—INSTRUCTIONS

1. The inputs into columns in the 'Report Recommendations' on page 13A–4 of [annex A](#) are to be based on:
 - a. 'Serial' column is to relate to the corresponding serial number on the 'Report Checklist' on page 13A–3 of [annex A](#).
 - b. 'Status' column refers to the inspecting officer's observation. This can be:
 - S** Satisfactory (No issues identified and fit for purpose).
 - GS** Generally satisfactory (Those matters that represent actions required to minimise damage to property and contents, or provide direct protection to the building and contents, or improve the effectiveness of fire fighting in/on the property in the event of fire).
 - U** Unsatisfactory (Those matters that represent a serious threat to the safety of occupants or risk to capability should a fire occur, or provides an unacceptable risk likely to aid in the development of fire, or a serious threat to adjoining property).
 - XX** Unacceptably dangerous (Those matters that represent a serious direct threat to occupants or property).
 - FA** Further assessment (Is used when further information is required to determine the status—eg input required from a fire safety engineer or structural engineer).
 - N** Inspecting Officer's notes (Is used in addition to the status when further information will enhance the report).
 - NA** Not applicable.
 - c. 'Description of Issue' column gives a brief description of the observation/issue of concern and relevant references. Inspecting officers are to provide a description of the issue related to a relevant code or standard where applicable.
 - d. 'Recommendation' column details the method proposed to rectify the problem. The recommendation is to clearly detail the area of concern, the scope of required services and the action required to complete the works without referring to any other column in the report recommendation table. The description is to be clear enough to be able to be used for standalone work directions.
 - e. 'Action By' column is the entity/person/s responsible for actioning the recommendations.
 - f. The 'Work Request' column may be used by the inspecting officer to record the work request number if required by the project FSO.
 - g. Inspecting officers will provide a figure in the 'Cost Estimate' column for all recommendations where a work request has been raised if required by the project FSO. The intent of the cost estimate is to provide notional costs for works for budgeting purposes, with a range of plus or minus 50 per cent accuracy.
2. The completion timeframes for recommendations are determined by the assigned priority. The Priority relates to the urgency of the recommendation as follows on page 13B–2:

- P1** These matters require the immediate implementation of a risk mitigation strategy and are to be made safe/rectified within 48 hours.
- P2** These matters are to be actioned within 90 days and require the implementation of a risk mitigation strategy which must be maintained in place until the matter is rectified.
- P3** These matters are likely to require works or further assessment to decide the appropriate course of action and programmed for completion within 24 months.
- P4** Those matters that represent recommendations to upgrade the level of fire protection to comply with the current BCA and standards. Normally, P4 recommendations are building issues that complied at the time of construction and require no further action as they will be addressed when the building has major alterations or is refurbished.
- P5** Those matters related to the maintenance of fire systems and equipment.

CHAPTER 14

EGRESS AND PHYSICAL SECURITY REQUIREMENTS

Scope

14.1 This Chapter details the egress requirements for door hardware in Defence owned or occupied buildings where physical security is necessary, including requirements for egress through barriers in the path of travel to open space.

Aim

14.2 The aim of this chapter is to provide guidance for reducing the possibility of conflict between fire safety and physical security requirements by providing guidance on how the required levels of security can be obtained. This chapter will:

- a. clarify BCA provisions for secure areas as they apply to Defence; and
- b. specify MFPE requirements.

References

14.3 Reference is necessary to current issues of the following documents:

- a. Building Code of Australia (BCA);
- b. Defence Construction Security Reference Manual;
- c. Defence Security Manual; and
- d. Australian Standard (AS) 1905.1—*Components for the protection of openings in fire resistant walls—Fire resistant doorsets*.

Application

14.4 The requirements of this chapter apply to all Defence owned or occupied buildings.

14.5 This chapter specifies requirements for:

- a. doorways in a required exit,
- b. doorways forming part of a required exit,
- c. doorways or security barriers in the path of travel to a required exit, and
- d. egress through barriers in the path of travel to open space.

Notes

An 'exit' is as defined in the BCA.

A 'doorway forming part of a required exit' means a doorway or door that provides access to or is within a fire-isolated stairway or ramp; or a fire-isolated passageway.

A doorway or door in a path of travel to an exit is any door, excluding cupboards and service openings that a building occupant must pass through to reach the exit from the storey.

Open space is as defined in the BCA—ie means a space on the allotment, or a roof or similar part of a building adequately protected from fire, open to the sky and connected directly with a public road.

14.6 The term exit is used as a generic term to capture the requirements for doorways referred to in sub-paragraphs 14.5a.–c.

Requirements

14.7 Means of egress from Defence buildings shall be in accordance with the requirements of the BCA. For the purpose of this chapter, the 'or the like' part of clause D2.21(a)(iii) of the BCA applies to Intruder Resistant areas of Defence facilities.

14.8 Required levels of security may be achieved by:

- a. mechanical locks;
- b. electromechanical locks; and
- c. electromagnetic locks, in combination with mechanical locks.

Note. The above locks are defined in the Defence Construction Security Reference Manual.

14.9 Mechanical locks are permitted to be installed on 'exit' doors when they comply with clause D2.21 of the BCA. Mechanical locks must not restrict persons from exiting from the side of the door facing the person seeking egress. Redlam bolts or the like are prohibited on 'exits'.

14.10 Where electromechanical or electromagnetic locks are installed on 'exit', they shall be accompanied by a manual override release device, commonly referred to as a break glass unit (BGU), installed on the side of the door facing the person seeking egress. This also applies if the door is released on sprinkler or fire alarm activation. BGUs must comply with the following points:

- a. be located between 900 mm and 1.1 m and adjacent to the door hardware side of the door;
- b. be green in colour;
- c. the operation of the BGU must release the locking mechanism of the door;
- d. must have battery back-up. The locking mechanism of the door must release in the event of mains supply and backup power failure; and
- e. signage saying Emergency Door Release or similar is to be provided with the BGUs. The signage should be white lettering on a green background.

Note. The exits may be wired to a security system and sounders if required.

14.11 Where Defence buildings have secure perimeter fencing or the like, a means of egress to a public road must be available according to the requirements of clause D1.10 of the BCA. For the purpose of the application of these requirements, the road infrastructure on a Defence site may be considered as a public road.

14.12 Where a conflict between the Defence mandatory security requirements and the egress provisions of the BCA exist, then the *Alternative Solution* process detailed at [chapter 26—'Alternative design solutions, dispensations and certification for defence projects'](#) is to be completed.

Fire resistant doorsets

14.13 Door hardware must not be installed on fire resistant doorsets unless it has been tested in accordance with the requirements of AS 1905.1 and found to be compliant with the prototype fire doorset.

CHAPTER 15

MAINTENANCE

Scope

15.1 This chapter specifies Defence requirements for the maintenance of fire safety measures in a building.

Aim

15.2 The aim of this chapter is to mandate the minimum maintenance requirements of active and passive fire safety measures in Defence owned or occupied buildings.

References

15.3 Reference is necessary to current issue of the following documents:

- a. the Building Code of Australia (BCA);
- b. Australian Standard (AS) 1851–2005—*Maintenance of fire protection systems and equipment*;
- c. AS 1851—*Maintenance of fire protection equipment—Parts 1–16*;
- d. AS 2293.2—*Maintenance and testing of emergency evacuation lighting in buildings*;
- e. National Fire Protection Association (NFPA) 11—*Standard for Low-,Medium-, and High-Expansion Foam*; and
- f. guidelines for testing fixed aqueous film forming fire suppression systems—refer to fire protection section on <http://www.defence.gov.au/im/policy/technical/technical.htm>.

Requirements

15.4 Maintenance must be undertaken in accordance with the standards applicable in [paragraph 15.3](#). The AS 1851 parts 1–16 suite of standards is to be applied as the minimum Defence maintenance requirement. AS 1851–2005 shall be the minimum standard for buildings that were approved for construction in Queensland after 25 September 2005.

15.5 A building's active and passive fire safety measures must perform to a standard not less than they were originally required to achieve.

- a. Post 1990—in accordance with part I1 of the BCA that was in force at the time of *Building Approval*.
- b. Pre-1990—in at least their original condition.

15.6 Fire safety measures associated with an *Alternative Solution* or Dispensation must be identified on the essential services schedule for the building. Those measures must be maintained in accordance with the requirements specified in the *Alternative Solution* or Dispensation, or by the building certifier in the Certificate of Occupancy.

Specialist foam installations—Aircraft hangars

15.7 These systems shall be maintained/tested in accordance with the standards referenced in [paragraph 15.3e.](#) and [f.](#)

CHAPTER 16

MANUALLY OPERATED FIRE ALARM CALL POINTS

Defence has no additional requirements over and above the Building Code of Australia (BCA). This chapter is deleted and reserved.

CHAPTER 17

EXPLOSIVE ORDNANCE—FIRE SAFETY

Aim

17.1 The aim of this chapter is to detail the matters that must be considered when formulating fire safety requirements for new facilities and upgrading of existing facilities.

Scope

17.2 This chapter identifies the fire safety aspects associated with Explosive Ordnance (EO) storage facilities and details the procedures and training requirements to ensure adequate protection of EO, a safe working environment and a duty of care to neighbouring properties.

Definitions

17.3 The following definitions apply in the context of this chapter:

- a. DOS—Directorate of Explosives Safety;
- b. EO—Explosive Ordnance;
- c. ESTC—Explosives Storage and Transport Committee;
- d. ESH—Explosive Storehouse;
- e. NATO—North Atlantic Treaty Organisation;
- f. ECC—Emergency Control Committee;
- g. ECR—Emergency Control Room;
- h. ECO—Emergency Control Organisation;
- i. ERP—Emergency Response Plan; and
- j. OIC—Officer-in-Charge.

References

17.4 Reference is necessary to the current issue of the following documents:

- a. [Defence Instruction \(General\) LOG 4-1-006—Safety of Explosive Ordnance](#);
- b. [Chapter 6—'Bushfire management and mitigation on the Defence estate'](#);
- c. Building Code of Australia (BCA);
- d. Australian Standard (AS) 2419.1—*Fire hydrant installations, system design, installation and commissioning*;
- e. AS 1221—*Fire hose reels* and AS 2441—*Installation of fire hose reels*;
- f. AS 2444—*Portable fire extinguishers—Selection and location*; and
- g. AS 3745—*Emergency control organisation and procedures for buildings*.

Facility planning—fire safety assessment

17.5 During the explosive site selection process, a fire safety appreciation paper should be prepared by proponents. This appreciation shall include a land management plan similar to that detailed in [chapter 6](#) and shall detail the methods proposed to minimise the possibility of fires (and their severity) originating within Defence property, impacting on facilities spreading to adjoining property, or fires originating on external properties spreading to Defence property. The appreciation shall also:

- a. Determine the appropriate methods to be employed to minimise ground fuel build-up, eg one or more of the following:
 - (1) conduct mosaic pattern burning-off utilising access roads as firebreaks; or
 - (2) leasing for agistment; or
 - (3) mowing or slashing as appropriate in the prevailing environmental conditions.
- b. Determine the most appropriate method of installing and maintaining perimeter and other firebreaks considered necessary for the protection of the depot and its facilities, eg:
 - (1) grading,
 - (2) rotary hoeing,
 - (3) ploughing, or
 - (4) chemical treatment.

The above methods may be used in conjunction with burning-off to achieve the necessary cleared width for firebreaks to be effective.

- c. Establish the firefighting manpower resources available to the facility, eg:
 - (1) auxiliaries—partially trained staff;
 - (2) volunteers—State government, moderately trained in structural and bush firefighting;
 - (3) professional full-time State government fire service; or
 - (4) service trained fire personnel experienced in all aspects of firefighting, available on a 24 hourly basis.
- d. Establish the likely response times of fire crews to a fire incident at the facility and its likely impact on adjoining areas and firefighting activities.
- e. Identify the ESH construction configuration, eg:
 - (1) above ground with required traverses/revetments;
 - (2) below ground; or
 - (3) above ground earth covered.
- f. Consult local ‘fire control officers’ or Program Fire Safety Officers as to the history of bushfire incidents and their severity/frequency in the proposed area of the facility and assess the fire risk from sources other than potential EO sources, eg adjoining land and the general fuel loading (vegetation type, height, density etc) and fuel loading within the facility area. Determine which of the following categories applies:
 - (1) extreme—internal/external;
 - (2) high—internal/external;

- (3) moderate—internal/external; or
 - (4) low—internal/external.
- g. Determine the source(s) of:
- (1) reticulated town water supplies;
 - (2) dams/ponds—(evaporation effects, rainfall/seepage replenishment); or
 - (3) streams (flowing year round or seasonally dependant).

Pressure and flow characteristics/capabilities shall be recorded.

17.6 Having identified the contents to be stored in each ESH in accordance with the physical security policy categories as detailed in [chapter 1—'Fire Protection of Defence assets'](#), the appreciation shall provide an assessment of the fire safety situation and make recommendations as to the overall facility fire safety requirements, based on the information gathered above and the minimum requirements detailed in this chapter.

FACILITY FIREFIGHTING REQUIREMENTS

Water supplies

17.7 Because a direct attack on an ESH involved in fire generally presents an unacceptable risk to staff and firefighters (see [paragraph 17.19](#)), the BCA 'Deemed to Satisfy Provisions' for fire hydrants in close proximity to facilities are not appropriate. Therefore, **fire hydrant reticulation shall not normally be installed in EO storage areas**. However, where the fire risk external to the facility boundary is assessed as extreme or high and the internal fuel loading is at moderate to high and cannot be reduced because of environmental implications, a submission should be forwarded to Assistant Secretary Environment, Heritage and Risk requesting dispensation from this policy and detailing the reasons for the request. Where a reticulated water supply is provided, the provision of overhead filling points for the replenishment of fire vehicles and knapsack filling points should be its primary function.

Note

ESH constructed below ground, or above ground earth covered may mitigate a high fire load risk.

17.8 For facilities without reticulated water supply, water supplies for the replenishment of firefighting vehicles shall be provided. Acceptable water supplies are:

- a. an existing town main supply within 3 km of the facility; or
- b. a water storage facility of not less than 200 000 l available at all times, preferably at more than one site. This capacity shall be in excess of domestic requirements and shall take evaporation into consideration.

Each water supply source shall have a vehicle overhead filling point capable of replenishing a firefighting vehicle within approximately five minutes. This may be achieved by gravity feed or by utilising pumping equipment.

Firefighting vehicles

17.9 The requirement for dedicated firefighting vehicles may be deleted if, during the fire safety assessment ([paragraph 17.5](#)) it was determined that an adequate firefighting response could be provided by one or more of the fire services listed in [paragraph 17.5c.\(2\), \(3\) or \(4\)](#). Fire brigade response times of over 15 minutes would require that a commensurately higher level of passive protection measures be adopted by the facility ([paragraph 17.5](#) refers).

17.10 Where firefighting vehicles are to be provided, vehicles with a rural and domestic capability are required. Vehicle configuration and operation should be suitable for use by relatively untrained staff. A vehicle configuration with high pressure hose reels with automatic nozzles delivering 'A Class Foam' would provide an acceptable capability. The number, size and water carrying capacity of these vehicles shall be determined as a result of the risk assessment process detailed in this chapter. The identification of staff to crew these vehicles and the continuation training requirement for those staff are essential elements of this assessment.

17.11 First attack firefighting equipment. 'Fire points' consisting of appropriate first attack firefighting equipment are to be provided throughout the facilities. In the administrative area of the facility, where a reticulated water supply is available on site, fire points are to be centred around fire hose reels located within four metres of required exits and at other locations as required by paragraph 17.4c. Hose reels are to be designed and installed in accordance with paragraph 17.4e. The fire points are to have extinguishers of type, size and quantity as required by paragraph 17.4f. Fire points within the explosives storage area shall consist of extinguishers only.

Facility fire safety—emergency organisation

17.12 ECR. Each major EO storage facility or group of adjacent or adjoining facilities shall establish an ECR from within existing resources, the location of which should be in the administration area or other appropriate area immune to the effects of an explosives incident, of the most appropriate unit. The ECR shall be manned during all emergencies. Equipment in the ECR shall comprise:

- a. emergency telephones and incident log book;
- b. radio communications (if applicable and safe);
- c. tables, chairs and 24-hour clock;
- d. detailed location plan showing:
 - (1) location of each facility, its contents (and classification of EO if applicable);
 - (2) location of installed fire hydrants (if applicable);
 - (3) details of installed fire protection systems, first attack firefighting equipment and emergency equipment as appropriate;
 - (4) alternative water supplies and overhead vehicle filling points;
 - (5) primary and alternative access routes to each facility;
 - (6) a facility for showing the prevailing wind direction and strength; and
 - (7) contour lines on the plan showing the general topography of the depot area;
- e. a wall chart for recording progress details relating to any emergency situation, and
- f. a list of emergency telephone numbers for all members of the ECC and the appropriate emergency services.

17.13 ECC. An ECC shall be formed from within staff resources of the depot or group of adjacent or adjoining depots. The committee should comprise the following members:

Chairperson (ammunition storage unit OIC or deputy appointed by the OIC)
Communications Officer
Civil Agencies Liaison Officer
Security Officer
Senior Ammunition Technical Officer or equivalent unit Senior EO Technical Officer (if appropriate appointment exists)
Fire Officer
First Aid Officer

Additional members may be appointed at the discretion of facility OIC.

Notes

Service bases, where EO storage forms only a part of the base activity and an ECC and ERP are in place, may utilise that committee and procedures to meet the requirements of this chapter, providing the manning of the committee and the information required by this chapter are met.

Units with minor holdings of EO (typically Reserve units) and insufficient staff to man the appointments required by this paragraph, shall in lieu of this requirement appoint a contact/duty officer who shall be on call and shall have available the information required by [paragraph 17.12](#).

17.14 ERP. Each ECC shall formulate a detailed ERP appropriate to their facility. These plans should be discussed in detail with civilian emergency services organisations such as fire services, police and ambulance. ERPs are to be internally reviewed at regular intervals and when key staff members change. Plans should also be reviewed annually with the relevant emergency services. ERPs shall include but not be limited to:

- a. a map of site showing location of ordnance, surrounding land use etc;
- b. a register of material held on site;
- c. response procedures for fire, explosion and spills (where applicable);
- d. list of key contacts and details of their responsibilities in an emergency; and
- e. after-hours telephone numbers.

Draft ERPs should be forwarded to Program Command Ammunition Technical Officers for approval. A copy of the approved plan shall be provided to the relevant civilian emergency services.

17.15 Training. Designated staff should receive regular instruction in the identification, operation and use of first attack firefighting and emergency equipment held by the facility. The training should be to the Australasian Fire Authorities competency levels and include fire awareness instruction, fire prevention strategy and practice in firefighting procedures. Facilities with firefighting vehicles crewed by unit personnel shall ensure that the nominated crew(s) receive a level of training commensurate with the type and complexity of firefighting vehicles and the risks associated with individual facilities.

17.16 Practice drills/exercises. Practice drills to test and refine the ECC and emergency procedures shall be conducted on a frequency of not less than three-monthly. Joint exercises involving civilian emergency services shall be conducted at least annually. Depending on the requirements of the local responding emergency services, these exercises may take the form of a planning exercise and familiarisation visit.

17.17 Inspections and reporting. To supplement the fire safety surveys required by [chapter 13—'Fire safety surveys—Defence assets'](#) the unit Fire Officer accompanied by appropriate Technical Inspection Staff, shall conduct quarterly fire safety inspections of unit facilities. The results of these inspections and any rectifying actions shall be recorded in the ECR log book. The purpose of the supplementary inspections is to ensure that any significant change between fire safety surveys is assessed and appropriate actions are taken to mitigate any additional or new risk identified (eg change of storage, deterioration in general housekeeping and escape aisle width reduction or obstruction). The supplementary inspections may be performed by a responsible person from the base such as a member of the ECC or the EO Manager.

17.18 Housekeeping. The highest possible level of housekeeping shall be maintained in EO storage areas. All non-essential electrical equipment/lighting shall be switched off when buildings are not occupied.

17.19 Firebreaks. Firebreaks are installed to inhibit the spread of fire and provide a safe point from which to conduct firefighting operations (back-burning if conditions permit). Firebreaks shall be installed inside the perimeter of all major EO storage facilities to a minimum width of 15 m. This width may require widening depending on local conditions. When a considerably wider break is required, the construction of a second, narrower firebreak at the desired width and burning out the intervening vegetation when the full width firebreak is required, is one acceptable option. If necessary, to provide manageable plots of land, additional internal firebreaks shall be installed to a width of seven metres. Access tracks and sealed roads shall be utilised to augment the installed firebreak system. Firebreaks shall be maintained on an

as required basis. Firebreaks in the form of a mowed grassed area (grass height not to exceed 100 mm) 15 m in width shall be maintained around each building containing ammunition or explosives and trees and shrubs shall be cleared to a distance of 30 m.

17.20 Firefighting responses. When a fire incident occurs involving EO, every attempt shall be made by trained staff in attendance to extinguish the fire using available first attack firefighting equipment. Except for this initial first attack firefighting response, fires in ESH should not be fought without formal direction from the depot OIC. Firefighting efforts should be concentrated on protecting adjacent buildings from the heat generated and extinguishing spot fires as they occur. The depot OIC shall determine the appropriate firefighting response and shall be guided by the recommended responses in [annex A](#). Consideration of the following circumstances will be necessary prior to attempting further firefighting action:

- a. classification(s) of EO involved in the incident, its reactions to fire and its 'asset classification' (see [chapter 1](#));
- b. construction of the storage facility concerned and the type of traverses provided;
- c. capabilities of firefighters to respond to the incident;
- d. availability of protective areas from which to conduct firefighting operations;
- e. resources available both in manpower and equipment;
- f. the likelihood of spot fires occurring from blast residue or other storage facilities becoming involved as a result of fragments penetrating roofing, etc; and
- g. command, control and communications in place should further firefighting actions, additional to the original incident, be necessary.

17.21 Command and control. Command and control shall include:

- a. on notification of fire, alarms are to be sounded and civil, Service or auxiliary fire authorities notified;
- b. all fire services responding to an incident are to seek technical advice from the depot OIC; and
- c. if, after addressing the considerations detailed above and the recommended firefighting responses in [annex A](#), the facility OIC determines that the fire may be fought, firefighting operations should be conducted from behind cover.

17.22 Explosive Ordnance—minor storage. An EO storage facility is to be determined as either major or minor by the relevant licensing authority. Fire safety for minor storage, eg unit magazines, are to comply with the following minimum standard:

- a. Each facility shall be equipped with a minimum of one water type fire-extinguisher irrespective of whether it is an isolated, purpose built building or a cabinet located within a building. Extinguishers allocated to isolated buildings shall be suitably protected from the weather and located not more than five metres from the facility. Internal storage shall be protected by an extinguisher sited not more than three metres from the risk.
- b. All forms of EO storage shall be signposted in accordance with [annex A](#).
- c. All electrical circuits shall be switched off when the building(s) are not in use. Exceptions being for security devices and/or lighting.
- d. External storage, combustibles shall be removed to a distance of 15 m (mown grass).
- e. Internal storage, no combustibles to be within 2 m.
- f. Emergency procedures are to be promulgated in appropriate unit/establishment instructions detailing the action to be taken in the event of fire occurring in minor storage areas. These instructions are also to detail the actions to be taken in fighting the fire in minor storage facilities and the evacuation and safety of personnel (see [also paragraph 17.14](#)).

- g. As minor storage facilities may vary in construction, size and risk, the above requirements are to be considered minimum. In areas where water reticulation is provided, it is considered desirable that a fire hydrant be within 90 m of such storage facilities.

Annex:

- A. [Firefighting procedures—Explosive ordnance behaviour when involved in a fire](#)

FIREFIGHTING PROCEDURES—EXPLOSIVE ORDNANCE BEHAVIOUR WHEN INVOLVED IN A FIRE

FIRE DIVISION	EXPECTED BEHAVIOUR	ACTION
1.1	Expected to explode en masse very soon after fire reaches it. Major hazards will be from blast accompanied by high velocity projections and buildings debris.	<ol style="list-style-type: none"> 1. Sound alarm. 2. Fires detected in the early stages should be fought with all available means. If unsuccessful evacuate to a safe distance. 3. No attempt should be made to fight the fire after it reaches the ammunition. 4. All non essential personnel are to evacuate the area.
1.2	Not expected to explode en masse. Initially there will be small sporadic explosions which will increase in intensity as the fire takes hold. Hazards will be from hot fragments, fire brands, unexploded and self propelled items which may be expected to explode on impact.	<ol style="list-style-type: none"> 1. Sound Alarm. 2. Fires detected in the early stages should be fought with all available means. 3. If the fire cannot be extinguished, the scene of the fire is to be evacuated and firefighting concentrated on preventing the spread of fires to exposed sites. 4. All non essential personnel are to evacuate the area.
1.3	Explosives in this division have only a minor or no explosion effect. The hazards will range from intense flame and radiant heat through to items which burn sporadically with minor explosions.	<ol style="list-style-type: none"> 1. Sound alarm. 2. Fires detected in early stage are to be fought with all available means. If the fire cannot be extinguished the site is to be evacuated and firefighting concentrated on preventing the spread of fires to exposed sites. 3. Take full advantage of any available protection from radiant heat. 4. All non essential personnel are to evacuate the area.
1.4	Explosives in this division have only a moderate fire hazard. Minor explosions may occur but there will be no blast and fragments will be limited to the vicinity of the fire.	<ol style="list-style-type: none"> 1. Sound Alarm. 2. Fires detected in the early stage are to be fought with all available means. If the fire cannot be extinguished, full advantage is to be taken of any available shielding during the continued action. 3. All non essential personnel are to evacuate the area.

FIRE DIVISION	EXPECTED BEHAVIOUR	ACTION
1.5	Explosive substances with a mass explosive hazard but are so insensitive that there is little probability of initiation or transition from burning to detonation under normal storage conditions. The probability of transition is greater when the stores are confined.	<ol style="list-style-type: none"> 1. Sound alarm. 2. Fires detected in the early stages should be fought with all available means. If unsuccessful evacuate to a safe distance. 3. No attempt should be made to fight the fire after it reaches the explosives. 4. All non essential personnel are to evacuate the area.
1.6	Explosive articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation. This risk is limited to the explosion of a single article.	<ol style="list-style-type: none"> 1. Sound alarm. 2. Fire detected in the early stages should be fought with all available means. If unsuccessful evacuate to a safe distance. 3. No attempt should be made to fight the fire after it reaches the explosives. 4. All non essential personnel are to evacuate the area.

Fire Divisions—Explanatory Notes

1. The divisions into which explosives and ammunition are divided are:

- a. **Fire Division 1.** Explosives susceptible to explosion en masse. These items may explode en masse. The explosion may result in severe structural damage, the severity and range being determined by the amount of high explosive involved. There may be a risk from heavy debris propelled from the structure in which the explosion occurs. Blast, flame and high speed fragments constitute the major hazard to the nearby surrounding area.
- b. **Fire Division 2.** Explosives which do not explode en masse, having a projection hazard but minor explosion effects. These items burn and explode progressively, a few at a time. A considerable number of small and large hot fragments, firebrands, unexploded and self-propelled items, may be projected; some of these may explode on impact and propagate fire or explosion. Blast effects are limited. Projectiles and cartridges from 20 mm and upwards, not mass exploding, fall within the category.
- c. **Fire Division 3.** Explosives which do not explode en masse, having a fire hazard with minor or no explosion effects. **Some** items burn with great violence and intense heat, emitting considerable thermal radiation over a wide area. Others burn sporadically. They may explode but without the risk of mass explosion. Usually these items do not form dangerous fragments. Firebrands and burning containers may be thrown around.
- d. **Fire Division 4.** Explosives which present no significant hazard. These items are primarily a moderate fire hazard. They do not contribute grossly to a fire, and the effects are mainly confined within the package. No fragments of appreciable size or range are to be expected until the package is consumed by fire. An external fire would not cause the mass explosion of a package of such items. This division includes the so-called safety class of explosives.

- e. **Fire Division 5.** Explosives with a mass explosive hazard but are so insensitive that there is little probability of initiation or transition from burning to detonation under normal storage conditions. The probability of transition from burning to detonation is greater when the stores are confined. Firefighters are advised to treat Fire Division 5 similarly to Fire Division 1 for, if transition to detonation occurs, the results will be similar to those of a Division 1 explosion.
- f. **Fire Division 6.** Explosives with a mass explosive hazard but are so insensitive that there is little probability of initiation or transition from burning to detonation under normal storage conditions. The probability of transition from burning to detonation is greater when the stores are confined. Firefighters are advised to treat Fire Division 6 similarly to Fire Division 1 for, if transition to detonation occurs, the results will be similar to those of a Division 1 explosion.
- g. **Metallic Powders.** Metallic Powders are classified as Class 4 Dangerous Goods in accordance with the (UN) System for the Classification of Dangerous Goods. Metallic powders are sometimes used as ingredients of explosive compounds, and hence stocks may be located in explosives areas. They constitute a special risk because they are capable of burning fiercely and reacting violently with water.

Among the substances suitable for use on the majority of metal powder fires are powdered graphite, talc, soda ash, limestone and sand, all of which must be in a dry state. The extinguishing agent should be carefully spread on the fire, starting from outside the burning area and working towards the centre, using long-handled scoops or shovels. The utmost care is necessary to avoid any disturbance of the burning powder until it has cooled below its ignition temperature.

Suitable chemical dry powders may also be used in bulk form, as above, or from portable extinguishers having low velocity, long-reach discharge applicators, subject to the dry chemical being non-hygroscopic and not unduly toxic.

Water or other extinguishers must not be used. A notice to this effect, together with the 'Use No Water' supplementary fire symbol is to be conspicuously displayed at each building, as appropriate.

Appendixes:

1. [Hazard Division Signs](#)
2. [Supplementary Fire Signs](#)

HAZARD DIVISION SIGNS



SUPPLEMENTARY FIRE SIGNS

SYMBOL

PROTECTIVE CLOTHING

HAZARDS



This comprises selfcontained breathing apparatus, impermeable head covering, gloves, suit and boots coveralls, protective footwear and undergarments.

Casualty agents



This comprises selfcontained breathing apparatus, coveralls and protective gloves

Harassing agents



This comprises selfcontained breathing apparatus, flame resistant coveralls and protective gloves.

Smoke and flame emissions from WP, HC, illum and pyrotechnical stores



No water to be used

CHAPTER 18

HERITAGE BUILDINGS

Scope

18.1 This Chapter sets minimum requirements for active and passive fire safety measures in Defence owned or occupied Heritage Buildings that are the subject of new works, a Substantial Alteration or a Change-in-Use.

Aim

18.2 The alteration or refurbishment of any building of heritage, significance may be subject to a number of constraints, including economic and functional, as well as heritage factors. The aim of this Chapter is to give guidance on the application of current building regulations, standards and acts to maintain fire safety in Heritage Buildings.

References

- 18.3** Principal documents governing the alteration/refurbishment of heritage buildings are:
- a. National and Commonwealth Heritage Lists or the Register of the National Estate;
 - b. Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act);
 - c. State/Territory government heritage legislation;
 - d. Building Code of Australia (BCA); and
 - e. Site specific Heritage Management Plans.

Requirements

18.4 Compliance requirements for fire safety in Defence owned or occupied Heritage Buildings that are proposed to have new works, a Substantial Alteration or a Change-in-Use are detailed in chapter 1, [paragraphs 1.6–1.19](#). These requirements are also applicable to Heritage Buildings.

18.5 Where new works, a Substantial Alteration or a Change-in-Use of a heritage building involves departures from the BCA or the MFPE, the requirements of [chapter 26—‘Alternative design solutions, dispensations and certification for defence projects’](#) shall apply.

18.6 Registering/listing of buildings by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) imposes certain constraints on the actions of Commonwealth Ministers and authorities. The EPBC Act provides that Commonwealth Ministers and agencies must not take any action which would adversely affect any Heritage Building unless there is no feasible and prudent alternative, or unless all action is taken to minimise damage where there is no such alternative. DSEWPC, through Engineering Policy and Environment branch must be informed of, and given time to comment on, any Commonwealth action that might significantly affect a listed Heritage Building.

CHAPTER 19

FIRE SAFETY—LIGHTING OF FIRES DURING PERIODS OF PROCLAIMED HIGH FIRE DANGER—DEFENCE FACILITIES

Scope

19.1 This chapter details the restrictions placed upon the Department of Defence regarding the lighting of fires in the open during proclaimed high fire danger periods imposed by State and or territorial governments and agencies.

Aim

19.2 The aim of this chapter is to explain the restrictions imposed during periods of proclaimed high fire danger.

Definitions

19.3 The following definitions apply in the context of this chapter:

- a. Open—other than in properly constructed fireplaces.
- b. EOD—Explosives Ordnance Disposal.

Background

19.4 As a consequence of the 1983 Ash Wednesday fires in South Australia, a local council which permitted a rubbish-tip to continue to burn on a day of total fire ban and, as a consequence, was judged to have caused major losses of property, has received claims totalling some \$15 million.

19.5 The Commonwealth is not protected by any special legislation in this area and therefore will in almost all circumstances, be liable for any damage caused by a fire which started on Commonwealth property.

Defence responsibilities

19.6 This chapter addresses Defence's responsibilities for:

- a. procedures to be adopted by all Defence establishments;
- b. procedures to be implemented by the Services during operations/exercises, including live firing range practises;
- c. EOD teams conducting necessary disposal/demolition of unexploded ordnance on other than Defence property; and
- d. ammunition depot staff conducting necessary disposal of ammunition/explosives on Defence property during proclaimed high fire danger periods.

Procedures

19.7 The following procedures are to be adopted:

- a. All Defence establishments are to comply with fire restrictions imposed by State and/or territorial governments and agencies.
- b. When operations/exercises are to be conducted during proclaimed high fire danger periods, the controlling Service is to ensure that adequate firefighting resources are provided to minimise the risk of fire outbreaks spreading to adjoining civil property.

- c. Services controlling EOD teams requested by civil agencies to assist in the disposal or demolition of unexploded ordnance shall ensure that appropriate measures are implemented to minimise the risk of fire occurring. Depending on the circumstances of the request, either or both of the following precautions shall be adopted:
 - (1) local civil fire brigade attendance shall be requested; or
 - (2) response vehicles shall be equipped with portable fire extinguishers and/or knapsack sprayers.
- d. Ammunition depot staff conducting necessary disposal of ammunition/explosives shall adhere to those fire precautionary measures laid down by the controlling Service. However, adequate firefighting resources are to be provided to minimise the risk of fire outbreaks spreading to adjoining civil property.

CHAPTER 20

CRITICAL EQUIPMENT AND FACILITIES—FIRE PROTECTION

Aim

20.1 The aim of this chapter is to detail Defence policy for the fire protection of critical equipment and facilities.

Scope

20.2 This chapter provides a risk assessment process for determining suitable fire protection measures to protect critical equipment in Defence facilities and details gaseous agents acceptable to Defence as halon replacements.

General

20.3 Although the level of protection for critical equipment should be determined on a case-by-case basis, the basic acceptable level of protection for critical/expensive/long replacement lead time equipment should consist of a sprinkler system designed to Australian Standard (AS) 2118—*Automatic fire sprinkler systems*, with fast response heads. This system should be installed in conjunction with an air sampling (aspirating) smoke detection system listed on the *ActivFire Register of Accredited Fire Protection Equipment* published by Scientific Services Laboratory (SSL). The philosophy for this widely accepted level of protection is as follows:

- a. an aspirating system will detect overheated insulation, etc before visible smoke or flame occurs and provide three levels of alarm;
- b. a Stage 1 alarm (detecting smoke in as little as 0.01 per cent concentration) allows personnel in the work area to take an immediate action to rectify the problem (turn off the electricity to the equipment involved, use the portable fire equipment provided etc);
- c. a Stage 2 alarm (alarm occurs if smoke level increases) can be programmed to isolate building/equipment electricity supplies and/or airconditioning, close fire dampers, initiate personnel pager alarms through the fire indicator panel, etc (the majority of electrical fires will self-extinguish once the electricity is turned off);
- d. a Stage 3 alarm (alarm occurs if smoke level continues to increase) is normally programmed to call the fire brigade. This level of alarm can be programmed to occur at less than 0.1 per cent smoke concentration (normal smoke detectors detect smoke at a five per cent smoke concentration); and
- e. all these stages will have occurred before activation of the sprinkler system, therefore water will not be discharged on energised electrical equipment. However, in some specialised facilities, dry pipe pre-action sprinkler systems may have to be considered at design stage when determining the most appropriate suppression system.

20.4 The above level of fire protection is appropriate if:

- a. personnel are normally working in, or in close proximity to the area, allowing a rapid response to an early warning smoke alarm with portable firefighting equipment; and
- b. the equipment's electricity supply is isolated during all periods when staff are not in attendance, eg electricity isolated to flight simulator when facility is vacated. To ensure this isolation is achieved, Base standard operation procedures must incorporate this requirement or automatic isolation must be provided.

20.5 Gas flooding shall only be considered when:

- a. critical/expensive/long replacement lead time equipment is involved; and
- b. the equipment is required to operate during periods when personnel are not available to respond to an early warning smoke alarm, ie electricity cannot be isolated during periods of non-occupancy; or

- c. there is a risk of fire developing too quickly for responding personnel to safely control the outbreak using the portable firefighting equipment provided, eg the presence of pressurised flammable liquids etc; or
- d. the risk to be protected is in operational areas, ships, armoured vehicles, etc where personnel cannot leave the scene of a fire and therefore, the fire must be controlled quickly and a 'survivable atmosphere' must be maintained (see [paragraph 20.6](#)).

20.6 A number of agents have ActivFire Listing and are suitable for use in Defence applications, namely:

INERGEN™;
ARGONITE™;
FM 200™,
PYROGEN™ (see [paragraph 20.9](#));
NAFS II™; and
CO₂.

INERGEN™, ARGONITE™, FM 200™ and NAFS III™ are designed to provide a survivable atmosphere when discharged into a protected risk. However, because the specific nature and concentrations of Thermal Decomposition Products (TDP) produced by a fire cannot be safely predicted, the area should be evacuated until the fire is extinguished and the area has been thoroughly ventilated to remove the extinguishing agent and any TDP produced. Because of the reduced visibility (white out) during and after the discharge of PYROGEN™ and the potential toxicity of gases generated, PYROGEN is not approved for normally occupied spaces. Each of the above gases are suitable for particular applications in Defence establishments/equipments. The major advantages and disadvantages of the currently accepted gases are addressed in the following paragraphs.

20.7 INERGEN™ is a colourless, odourless, electrically nonconductive inert gas mixture (argon, nitrogen and carbon dioxide) which smothers the fire by reducing the amount of available oxygen in the protected risk, to a level which will not support combustion but will still sustain human life. Because no decomposition products are produced (by the gaseous agent), a survivable atmosphere is maintained in the fire compartment (see [paragraph 20.6](#)). Also, being of similar density to air, INERGEN™ is not as prone to leakage from a compartment as other gaseous agents and extinguishing concentrations can be maintained for a longer period (soak time). An INERGEN™ system requires several times the amount of extinguishing agent as NAFS III™ or FM 200™ for a given risk, eg a risk requiring 4 x 106 l cylinders of NAFS III™ would require 6 x 106 l cylinders of FM 200™ or 40 x 80 l cylinders of INERGEN™, therefore the physical limitations of the area to be used to store the cylinders must be a consideration. The cylinders can be stored off site, (up to approximately 100 m from the risk) but this will impact on the discharge time. The design concentration of INERGEN™ (34 per cent) must be discharged into the protected area within two minutes, to meet the AS requirements, although an extinguishing concentration will generally be achieved within one minute. This aspect must be considered, when a fire has the potential to develop very quickly.

20.8 ARGONITE™ is a 50/50 gaseous mixture of Nitrogen and Argon. It differs from INERGEN™, in that the gaseous mixture does not include carbon dioxide. In all other aspects, the information in [paragraph 20.7](#) applies.

20.9 FM 200™ is a colourless, electrically nonconductive gas, not dissimilar to Halon 1301 (although not as effective). Extinguishing concentrations are heavier than air and the gas extinguishes fires by physically cooling the fuel and by the production of free radicals which chemically interfere with the combustion process. Although FM 200™ vapour has a low toxicity at its design concentration (seven per cent), its decomposition products can be hazardous. The decomposition takes place on exposure to a flame or a hot surface at a temperature above 700 per cent with one of the decomposition product being hydrogen fluoride (HF). A risk protected with Halon 1301 would require approximately 1.5 times as much FM 200™, with the design concentration of FM 200™ required to be discharged in 10 seconds to meet AS requirements. To reduce the risk of significant quantities of decomposition products being produced, early detection (air sampling smoke detection system) should be utilised to provide rapid initiation and discharge to limit the production of HF to negligible quantities.

The rapid discharge makes FM 200™ a suitable agent to combat a fire which has the potential to develop quickly. Being significantly heavier than air, FM 200™ is more difficult to contain in a compartment, in extinguishing concentrations.

20.10 NAFS III™ has an Ozone Depletion Potential of 0.044 and therefore, is a 'Transitional Product', that is, it may be used in controlled quantities **but must be phased out in 10–15 years**. NAFS III™ is being marketed as a 'drop in' agent, requiring only minor modifications to existing Halon 1301 systems. If the hardware of the halon system is of the appropriate standard, the modifications required would be the replacement of the discharge nozzles and possibly, an additional cylinder (which would necessitate changes to the manifold) to accommodate the additional 10 per cent of agent required. As with FM 200™, NAFS III™ produces decomposition products when it comes into contact with flame or hot surfaces. Although NAFS III™ is not accepted for general gaseous systems applications within Defence, this agent has potential for normally unoccupied risks where a Halon 1301 system has discharged and/or replacement Halon 1301 is not available and immediate action must be taken to protect the risk.

20.11 Carbon Dioxide (CO₂) is still used in a number of gaseous flood systems throughout Defence. CO₂ is a colourless, odourless and electrically nonconductive inert gas. CO₂ is approximately one and a half times heavier than air and extinguishes fires by reducing the oxygen content in the atmosphere to a point where it will not support combustion. **At extinguishing concentrations it cannot sustain life** and its use in normally or casually occupied areas carries the risk of occupants being caught in an asphyxiating atmosphere. Existing systems should be assessed to ensure compliance with the new AS. Systems found not to comply are to be modified to reflect code requirements or be decommissioned. Both high pressure and low pressure CO₂ systems are being offered by fire protection companies. Because of the life threatening nature of the agent in extinguishing concentrations, any proposal for the installation of a CO₂ system in a normally occupied area must include reasons why the other agents listed above are not considered appropriate. Low pressure CO₂ systems lend themselves to the protection of local applications (cabinets, containers etc). Providing the local application cannot be occupied and the CO₂ cannot leak into an occupied area, or the quantity of CO₂ employed is not sufficient to produce a dangerous atmosphere in an adjacent occupied risk, low pressure CO₂ systems may provide a suitable level of protection for some applications.

20.12 If a gaseous flooding system is to be considered to protect equipment in a building, the following aspects must be addressed:

- a. Construction of building housing the risk to be protected, eg non-combustible, combustible, fire rated compartmentation etc.
- b. Physical limitations of the area, eg volume of area too large to gas flood, room/building unable to be suitably sealed to contain the agent (the gas flooding of individual cabinets may be an option in these cases), insufficient fire rated separation from adjoining or adjacent risks etc.
- c. Is the equipment to be protected the sole activity/risk in the building?
 - (1) If **yes**—ensure the room/building is sealed to contain the gaseous agent (close fitting doors and windows, dampers on vents and ducting, no under computer floor or above suspended ceiling access to other rooms etc). Rooms not specifically designed for the purpose should be positive pressure tested once modified, to determine suitability for the system proposed.
 - (2) If **no**—the room containing the risk should have a minimum of one hour fire separation from the remainder of the building. This is to counter the risk from a fire which starts in another part of the building and quickly burns through to the protected area so that when the gas is discharged, it will escape through the damaged perimeter walls of the protected room and not extinguish the fire.

Notes

Design concentrations of gaseous systems is critical. Concentrations in excess of those specified in the appropriate AS could produce dangerous overpressures and a hazardous environment for personnel. Design concentrations of less than the minimum required, or excessive leakage of the gaseous agent during discharge would fail to extinguish a fire and leave the equipment totally unprotected.

Maintenance contracts shall require maintenance contractors to guarantee the replacement of discharged cylinders within eight hours of being notified of a discharge, or **100 per cent backup of the gas utilised by the system must be stored on site to allow refurbishment of the system after a discharge has occurred**.

- d. Is the existing fire detection/suppression already installed in the building adequate? If the responding fire brigade is more than 10–15 minutes from the facility (depending on the type of construction), a sprinkler suppression system may be required. If the responding fire brigade can be in attendance in less than 10 minutes from the receipt of an alarm, the building is of non-combustible construction, there is minimal combustible material in the facility and an air sampling smoke detection system is installed to initiate an early response to a fire, the requirement for sprinkler protection may be reviewed on a case-by-case basis. **A gaseous flood system will not protect the structure of the building housing the critical equipment from an external fire threat and cannot be designed to do so. A gaseous system is designed to protect equipment within a structure protected by other means, ie noncombustible construction or sprinkler protection.** Either the smoke from an encroaching fire will initiate the gaseous system dump before the fire penetrates the compartment, or the fire will break through into the compartment and the discharging gas will escape into surrounding compartments/areas without reaching an extinguishing concentration.
- e. Suitable portable firefighting equipment is to be provided for use by staff. With the withdrawal of Halon, Carbon Dioxide (CO₂) and NAF P III, although not as efficient as Halon, are the most appropriate extinguishers to protect electrical equipment. Dry Chemical Powder shall not be used in areas with high value sensitive electronic equipment.
- f. Staff in the protected area are to be fully briefed on the operation of the gaseous flood system installed and the procedures to be adopted in case of alarm (false alarm or fire). This information must include the details of the servicing agents so that immediate action can be taken to replenish the system after a discharge. A copy of those procedures shall be displayed on site and regularly reviewed.
- g. Ensure adequate access is provided for fire vehicles.
- h. Ensure fire hydrants and firefighting water supplies are to AS 2419 requirements.
- i. Security implications, eg access to area for fire brigade personnel (security officer may need to be alerted by pager linked to fire alarm panel to provide access or accompany fire brigade personnel).
- j. Back up data tapes, disks, etc should be stored in a different building or fire compartment to the equipment being protected. Alternatively, data may be electronically transferred to another site for back up.
- k. A disaster recovery plan for the facility should be in place prior to the facility becoming operational.

20.13 Gaseous 'systems', ie agent and hardware, must be listed in the ActivFire Register of Accredited Products in order to be approved for Defence use. Designers/contractors offering systems shall be required to furnish the SSL listing number of the proposed system. Any system not listed shall be rejected or referred to the Director Estate Engineering Policy (DEEP) (details below) for determination of suitability.

System design and commissioning

20.14 Systems designed to protect risks with raised floors, shall be designed to protect the room and below floor areas as a single risk. ActivFire listed directional valves may be used to protect multiple risks where appropriate.

20.15 Systems shall be activated by dual circuit detection of smoke. First circuit shall be a multi point aspirating smoke detection system (make and model to match existing systems on Base) which shall be configured to power down the equipment in the room (if this will not damage the equipment) on detection of smoke. On detection of smoke by a second circuit of point type smoke detectors, the system shall start its discharge sequence in accordance with AS 4214—*Gaseous fire extinguishing systems*.

20.16 Where internally illuminated visual warning devices are utilised in accordance with section 8 of AS 4214, instruction labels in accordance with figure 8.1 of AS 4214 shall also be incorporated.

20.17 Commissioning of systems shall be in accordance with AS 4214 and shall include an enclosure integrity test in accordance with the procedures given in NFPA 2001, on all risks. This shall be followed by a gas discharge into a representative risk or risks. Design concentrations shall be measured at not more than 1 m from the floor and not less than 100 mm above the top of the highest hazard in the risk. Systems which fail discharge tests shall be rectified and further discharge tested until compliance is achieved. Costs associated with this further testing shall be borne by the contractor.

20.18 All proposals for the installation of gas flooding systems shall be referred for approval to the DEEP, Estate Policy and Environment Branch, BP-2-B049, Department of Defence, CANBERRA ACT 2600.

CHAPTER 21

FACILITIES—ACCESS FOR FIREFIGHTING AND EMERGENCY VEHICLES

Introduction

21.1 In the past there have been no regulatory requirements relating to this subject. Difficulties have been experienced by responding emergency services gaining required access to buildings in the event of fire or other emergency incidents.

Scope

21.2 This policy addresses the subject of access to buildings by Services and civilian firefighting services responding to emergency incidents.

Planning and siting of facilities

21.3 Staff responsible for 'Master Planning' and proponents of new facilities shall give due consideration to the requirement for access to facilities, based upon details provided in the following paragraphs.

Access criteria

21.4 Services firefighting vehicles. The following access criteria has been based upon existing vehicle details and are to be considered minimum requirements:

- a. Access width between buildings 6 m.
- b. Overhead vehicle clearance 3.5 m.
- c. All weather pavements capable of carrying vehicular traffic having a gross weight of not less than 14 000 kg.
- d. Where dead end access to facilities is proposed, turning circles shall be provided to accommodate vehicles having a turning circle of 20 m. Deletion of this requirement shall be formally agreed by the Director Estate Engineering Policy.

21.5 Civilian firefighting vehicles. Where a base or establishment is entirely supported by civil-ian emergency services, planners/proponents of new facilities shall determine the access requirements by consultation with the services that support that base or establishment.

Water supplies/fire hydrants

21.6 Where water reticulation is provided throughout a base or establishment, planners/proponents of facilities shall ensure fire hydrant outlets are available adjacent (within 30 m) of major access points.

Airfield fire/emergency vehicles

21.7 This policy does not apply to major firefighting appliances used solely for airfield emergency incidents.

CHAPTER 22

FIRE PROTECTION POLICY FOR HEALTH CARE BUILDINGS

Defence has no additional requirements over and above the Building Code of Australia. This chapter is deleted and reserved.

CHAPTER 23

STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS—FIRE SAFETY

Defence has no additional requirements over and above the Occupation Health and Safety legislation and Australian Standard 1940—*The Storage and Handling of Flammable and Combustible Liquids*. This chapter is deleted and reserved.

CHAPTER 24

SAFETY IN WELDING AND ALLIED PROCESSES—FIRE PRECAUTIONS

This chapter is deleted and reserved. The requirements for safety in welding and allied processes have been relocated to the [Infrastructure Management website](#).

CHAPTER 25

BUILDINGS FOR DISPOSAL

Scope

25.1 This Chapter sets minimum requirements for fire safety in unoccupied Defence facilities that are listed for disposal.

Aim

25.2 The aim of this Chapter is to detail minimum levels of fire protection and fire safety measures which must be maintained until disposal is completed.

References

25.3 Reference is necessary to [chapter 15—‘Maintenance’](#).

Background

25.4 The lack of personnel available to take immediate action when a fire occurs in a building awaiting disposal places additional emphasis on the requirement to maintain installed protection/detection systems, linked to the nearest fire brigade where appropriate.

25.5 ‘Duty of care’ obligations requires Defence to take a responsible approach when preparing facilities for disposal, so as not to unduly endanger the lives or property of neighbouring establishments, or to place lives of firefighters who respond to fires on Defence property, in unnecessary danger.

Requirements

25.6 The Regional Director is responsible for ensuring the following measures are met for facilities identified for disposal:

- a. Retain and maintain fire safety measures that were required at the time of Building Approval. This does not apply to portable fire extinguishers or fire safety measures that were installed solely to meet the MFPE requirements.
- b. Security of the building is provided such that vandalism or damage to the building that increases the risk of fire is minimised.
- c. Exits and exit paths must be maintained at all times.
- d. Must not be used for any purpose—ie storage, training or the like.
- e. Housekeeping must be maintained such that the risk of fire is minimised.
- f. Where the disposal action involves a number of buildings or complete depots, care must be taken to ensure that hazard reductions programs, ie fire break maintenance, grass cutting, etc is maintained until disposal action is completed.

25.7 Where the building is reoccupied or reused, then the general MFPE requirements will apply.

CHAPTER 26

ALTERNATIVE DESIGN SOLUTIONS, DISPENSATIONS AND CERTIFICATION FOR DEFENCE PROJECTS

Introduction

26.1 *Manual of Fire Protection Engineering* (MFPE) details the minimum Defence requirements for the construction and fire protection of Defence facilities and assets. This chapter is in keeping with the expected requirements of the Commonwealth Governments Fire Safety Policy.

26.2 There are a number of reasons why a project may find it difficult or impossible to comply with the requirements of this manual, or the codes and standards it specifies. Heritage requirements, or the existing structure of a building programmed for major refurbishment, may mean that alternative design solutions are required to meet the intent of the level of occupant safety and asset fire protection required by Defence. For new construction, given the rapid advances in technology and fire protection engineering, designers may propose alternative solutions to the generally prescriptive requirements of codes and standards, which still afford the same level of occupant safety and asset protection. These solutions are not necessarily precluded, but require formal approval or dispensation from the requirements of MFPE, Building Code of Australia (BCA), or other relevant Standards and documents.

Note

As a general rule, all new facilities shall comply with the deemed-to-satisfy provisions of the BCA and the requirements of the MFPE. If alternative solutions are proposed for new facilities, they shall not result in a decrease in life safety of occupants and fire response personnel or a reduction of building resilience to fire.

Aim

26.3 The aim of this chapter is to detail the formal approval processes required for a project to:

- a. receive certification;
- b. utilise alternative design solutions; and
- c. receive dispensation from the requirements of MFPE, BCA, and other relevant Standards and policies.

Areas of non compliance

26.4 Areas of a project which would not comply with the requirements of this manual, the BCA, or the appropriate codes or standards, or would seek to utilise alternative design solutions, would normally be identified at the Functional Design Brief or initial design stages of a project. Formal written Defence approval of the alternative design solutions and dispensations must be obtained at the design stage.

Required construction standard

26.5 MFPE nominates the BCA as the Defence **minimum** construction standard. However, MFPE stipulates a higher standard of fire protection for some Defence facilities, for the following reasons:

- a. Defence insurance arrangements on its facilities or assets;
- b. some facilities are not adequately addressed (or addressed at all) in the BCA;
- c. strategic requirements;
- d. the unavailability of some replacement equipment/parts;
- e. the long replacement lead times for some equipment; and
- f. high replacement costs.

This protection may take the form of a higher required type of construction (A, B or C), additional fire compartmentation (fire walls), or the installation of additional measures not required by the BCA. These additional Defence requirements shall also be certified by the certifier (*see below*).

Certification

26.6 Who can certify. It is a Defence requirement, that certification of Defence construction projects be carried out by an accredited building surveyor, the certifier shall be accredited with the Australian Institute of Building Surveyors. The certifier may be an employee of the Commonwealth, or any of its Government Business Enterprises and authorities, but who have not been directly involved in the design or the construction of the building. The certifier could be a person on the design team provided they are engaged in a quality assurance capacity only.

26.7 To what standard. To meet the requirements of Defence, a certifier employed to certify a Defence project shall be required to certify that the project has been designed and constructed to the requirements of MFPE, the BCA and appropriate codes and standards.

26.8 Stages requiring certification. Certification is required at the following stages of a project:

- a. written certification of final designs and specifications shall be provided before construction commences;
- b. written certification that the construction is in accordance with the approved drawings and specifications;
- c. written certification that the completed project has been designed and constructed in accordance with MFPE, the BCA and applicable codes and standards; and
- d. written certification that the project or building complies with MFPE, the BCA and applicable codes and standards after any change of occupancy or use.

26.9 Certification of leased premises. The requirements of this chapter shall also apply to leased premises. Defence shall not enter into leases for premises which:

- a. have not been certified as complying with the requirements of this manual; or
- b. have not had dispensations approved for any areas of non-compliance.

Approval of alternative design solutions and dispensations

26.10 Defence must maintain a stringent and readily audited assessment and dispensation process. Whilst not submitting itself to the various State Board of Referees for approval of alternative design solutions and dispensations, the Defence procedures must be (and be seen to be) an equivalent review process. This formal process is also necessary, for the certifier to be able to carry out the functions required by this chapter and Defence Standard Forms of Contract.

26.11 The development of alternative design solutions shall be in accordance with the International Fire Engineering Guidelines, edition 2005, which requires the establishment of a Fire Engineering Brief (FEB) team at the start of the development process. The Director Estate Engineering Policy (DEEP), or a representative appointed by the DEEP, shall form part of the FEB team for all Defence projects.

26.12 The registration of fire safety engineers in Australia varies from State to State and the following are appropriate accreditation for carrying out fire engineering work for Defence:

- a. listed on the National Professional Engineers Register (NPER) maintained by The Institution of Engineers, Australia, for the area of practice of Fire Safety Engineering;
- b. registered as a fire safety engineer with the appropriate State or Territory body; and

- c. in a State or Territory where registration for the area of practice of Fire Safety Engineering is not available, fire safety engineers shall be either NPER listed or hold appropriate registration for the area of practice of Fire Safety Engineering in another State or Territory.

Note

In addition to the above listed registration requirements, fire safety engineers may also require other State or Territory registration before they can practice in the relevant State or Territory (eg registration with the Board of Professional Engineers Queensland (QLD) for the State of QLD).

26.13 The formal process would normally commence with a Defence Project Director/Officer or a consultant employed by him/her, identifying an aspect of a proposed project, which, for reasons identified earlier, either cannot comply with MFPE (which includes the requirement to comply with the BCA), or proposing alternative design solutions to those prescriptive requirements of MFPE, BCA, and other relevant Standards and documents.

26.14 The Project Director should then forward a formal request for dispensation or request for acceptance of alternative design solution to Assistant Secretary Estate Policy and Environment (ASEPE) for approval. ASEPE has the responsibility for managing the provision of Fire Protection Policy for the Defence Portfolio as required, would seek a technical assessment and recommendation from the DEEP and either approve or reject the dispensation or alternative design solution.

26.15 The request for dispensation should take the form of a minute, with provision for the various levels of review, recommendation and approval. For a request for a dispensation, the minute should clearly identify:

- a. the area of noncompliance (with specific reference to the appropriate section of the compliance document);
- b. the reason for noncompliance;
- c. any compensating factors; and
- d. cost implications, where relevant, by comparison of the initial and through life costs of the Deemed-to-Satisfy BCA and MFPE provisions with those of alternative design solutions.

Copies of any technical opinions or reports sought shall be enclosed. The submission should then be forwarded to the project certifier to ensure that the submission, if approved, would contain sufficient detail to allow the project officer to complete the certification of the project. A statement to that effect from the certifier, should accompany the request.

26.16 Requests for Defence acceptance of alternative design solutions should follow the same process as above. The submission should clearly state:

- a. the MFPE, BCA, relevant Standards and document requirements;
- b. the alternative design solution proposed;
- c. the reason that the alternative solution is proposed; and
- d. technical assessment of the alternative solution.

Copies of finalised requests (approved or disapproved) shall be forwarded to the design consultant and project certifier. The original request should be held on the project file. An example is in [annex A](#).

26.17 Where building certificates have been based on alternative solutions, no changes in building use, elements of building structure, building services, or building fire safety systems shall be carried out without prior consultation with the regional facilities maintenance manager. To facilitate the promulgation of this procedure, and to ensure ongoing relevance and adequacy of alternative solutions in Defence facilities, appropriate signage shall be provided at Designated Building Entry Points (DBEP) and, if not at the same location, at the building's fire indicator panel. In buildings where the fire indicator panel is located at a DBEP, only one sign shall be provided at that location. Typically, signage shall be as detailed below.

CAUTION

The fire safety systems in this building have been certified on the basis of complying alternative solutions, current building use, and design fuel loads and limitations.

Any changes in building use, elements of building structure, or building services can affect building compliance and may require recertification by an accredited Building Surveyor.

CAUTION—Times New Roman 15 mm high capitals.

Remaining lettering: Times New Roman 10 mm high capitals and 5 mm high standard letters.

All lettering black on white background.

Annex:

A. [Sample request for dispensation](#)

SAMPLE REQUEST FOR DISPENSATION

DEPARTMENT OF DEFENCE

MINUTE

File Number

ASEPE (BP-2-B001)

DEEP (BP-2-B049)

REQUEST FOR DISPENSATION FROM BCA REQUIREMENTS

References:

- A. Letter from design consultant requesting dispensation
- B. Letter from project certifier (unless included in request for dispensation)

1. Reference A highlighted the user requirement for a particular type and colour of carpet to be laid in the chapel and sanctuary. Although the carpet is available on government contract, the Early Fire Hazard Indexes for the carpet are higher than those specified by the BCA Specification C1.10 for this type of occupancy (9B). The design consultant is requesting dispensation from the BCA requirement of 'Smoke—Developed Index of not more than 5'. The proposed carpet has a Smoke—Developed Index of 7.

2. The following compensating factors are proposed:

- a. A smoke detection system is being installed to comply with MFPE. This system is not *required* by the BCA.
- b. The people attending the chapel will be familiar with the facility and its exits.
- c. The base fire brigade has a three minute response time to the chapel.
- d. The chapel will have emergency exit signs and emergency lighting.

3. Reference B confirms that this dispensation will allow the certifier to complete his design certification.

4. Project Certifier's Concurrence:

<p>I agree with the dispensation proposed in paragraph 1. Defence approval of this dispensation will allow me, as the building certifier, to complete the design certification.</p> <p style="text-align: right;">Signature Project Certifier (DATE)</p>
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5. Director of Estate Engineering Policy Comments:

1.	The objective of the BCA requirement is to provide a safe evacuation route, free of smoke, for the duration of the evacuation.
2.	The higher smoke developed is off set by the early warning provided by the non required detection system.
3.	The additional smoke developed after evacuation is off set by the response time of the responding fire brigade who could commence smoke venting if necessary.
4.	The dispensation is recommended.
	Recommended/Not Recommended
	Signature.....DEEP
	(DATE)

6. Dispensation:

A dispensation from the BCA requirement for a Smoke-Developed Index of not more than 5 for the chapel and sanctuary carpet is approved.
The installed carpet shall have a Smoke-Developed Index of not more than 7.
Approved/Not Approved
Signature.....ASEPE
(DATE)

7. If you require further information on this matter, please contact the Project Officer on (02) 6266 4543.

Project Director

(Location)
Telephone number

(DATE)

Enclosures:

- 1. Reference A
- 2. Reference B

CHAPTER 27

REQUIRED BUILDING CONSTRUCTION LEVELS IN DESIGNATED BUSHFIRE PRONE AREAS

Scope

27.1 The provisions of this chapter apply to construction in areas that are designated bushfire prone, and owned or leased by the Department of Defence.

Aim

27.2 The aim of this chapter is to detail minimum acceptable building construction levels, in areas designated as bushfire prone when assessed in accordance with State/Territory and Council requirements, or an approved Fire Management Plan.

Background

27.3 Australia does not have a nationally consistent approach to construction in bushfire prone areas and there is currently Defence employees, facilities, functions and capability may be put at an unacceptable level of risk, if buildings are constructed only to minimum Building Code of Australia (BCA) requirements (generally limited to dwellings) in designated bush fire prone areas.

27.4 Not all parts of the Defence Estate are susceptible to damage from bushfire and the required construction levels need only be applied in those areas where buildings have the potential to suffer unacceptable levels of damage.

Objectives

27.5 The objectives of protecting Defence buildings from bushfire are to:

- a. protect human life (including firefighters), buildings, assets and functions from bushfire;
- b. minimise the physical impact of bushfire;
- c. maintain capability during and after the passage of destructive bushfires; and
- d. provide that protection in an environmentally sustainable and cost effective manner.

Definitions

27.6 **Bushfire.** Any unplanned fire burning through substantially natural fuels.

27.7 **Bushfire prone.** This is an area that can support a bushfire or is likely to be subject to bushfire attack.

Determining Bushfire Prone Areas

27.8 Areas of the Defence Estate designated as bushfire prone are to be treated as 'designated bushfire prone areas' for the purposes of the BCA and Australian Standards (AS) 3959–1999—*Construction of buildings in bushfire prone areas*.

27.9 An area is bushfire prone if it can support a bushfire or is likely to be the subject to bushfire attack. For Defence purposes, a bushfire prone area includes both the area of vegetation that has been identified as having potential to support a bushfire as well as a 100 m strip adjoining or surrounding such vegetation.

Building components of a bushfire protection solution

27.10 An acceptable level of building protection from bushfires is achieved through a combination of:

- a. **Planning controls on bases:**
 - (1) considering bush fire protection and management issues in land use planning and development decisions, to provide a safe environment for the base; and
 - (2) controlling the type of facilities permissible in bush fire-prone areas;
- b. **Facility design.** Designing and siting buildings to improve the survivability of the building, and for the protection of life during the passage of the fire front; and
- c. **Services supply.** Ensuring water is available to occupiers and emergency services to enable the defence of buildings against bush fire attack.

Building construction

27.11 The overall intent of a bushfire protection strategy for a building is to mitigate the risk associated with bushfire attack by:

- a. preventing flame contact to a structure (separation from fuels);
- b. reducing radiant heat levels to below the ignition/damage thresholds for various elements of a building (separation and selection of building materials);
- c. minimising the potential for embers to cause ignition (materials and design); and
- d. reducing the effects of smoke on occupants and firefighters (design).

27.12 All buildings in bushfire prone areas shall comply with the design principles in AS 3959–1999. This standard specifies certain building construction details that will increase building survivability. AS 3959–1999 seeks to make a building a secure envelope protected against the entry of embers. It also provides a range of protection measures against the effects of radiant heat, flame contact and ember attack.

27.13 Furthermore, the bushfire protection requirements for any Defence facility shall also be determined so as to comply with the BCA and other State or Territory bushfire protection requirements that may apply. For example, in New South Wales (NSW) the assessment of bushfire attack category shall be in accordance with the methodology and approach of the NSW Rural Fire Service guidelines Planning for Bushfire Protection (PBP) 2006.

27.14 Although not necessarily prohibited, the Director Estate Engineering Policy must be consulted for all Defence construction projects that have been determined to be critical in accordance with *Manual of Fire Protection Engineering* (MFPE) [chapter 1—‘Fire Protection of Defence assets’](#), or have been classified as Major, Important or Sensitive and/or Attractive in accordance with MFPE [chapter 1](#).

27.15 Consultation with the relevant State or Territory Rural Fire Service shall be undertaken for all Defence projects that are to be constructed on bushfire prone land.

Access

27.16 Where a bushfire hazard exists on or adjacent to the development site, the access design criteria applied to the development shall meet responding fire brigade requirements.

Services

27.17 During major bushfire events, the protection and preparedness of the building and its occupants may be seriously jeopardised by the loss of basic services. The loss of services across all or part of a base may also impact on Defence capability.

27.18 As part of the development process for the construction of a building, it may be necessary to specify the provision of certain services. The provision of an adequate water supply is of particular importance.

Water supply

27.19 Maintaining a water supply for firefighting purposes provides protection in three ways:

- a. supplying hydrants and hose reels;
- b. supplying sprinkler systems; and
- c. providing water to refill firefighting tankers (hydrants or over head filling points).

27.20 It is common during major fire events for the supply of mains water pressure to drop significantly due to interruptions and extreme demand, preventing adequate protection.

Electrical supply

27.21 Where possible, electrical transmission lines should be underground. Where overhead electrical transmission lines are installed:

- a. lines should be installed with short pole spacing, unless crossing gullies, gorges or riparian areas; and
- b. no vegetation should be closer to a power line than the distance set out in [table 27-1](#). Regular inspection of lines is required to ensure branches do not foul them.

Voltage	Clearance at pole to the nearest conductor in rest position	Clearance along middle 2/3 of span the nearest conductor in rest position
(a)	(b)	(c)
Insulated service wires	0.5 m	0.5 m
Up to 22 kV	1.5 m	1.5 m or sag at 50°C plus 0.5 m (which ever is greater)
Up to 66 kV	2.25 m	2.25 m or sag at 50°C plus 1.0 m (which ever is greater)
Up to 132 kV	3.0 m	3.0 m or sag at 50°C plus 1.0 m (which ever is greater)

Table 27-1: Power Line Vegetation Clearances

Gas

27.22 Reticulated or bottled gas shall be installed and maintained in accordance with AS 1596—*The storage and handling of LP gas* and the requirements of relevant authorities. Larger gas cylinders should be kept clear of all flammable materials. If gas cylinders need to be kept close to the building, the release valve must be directed away from the building and away from any hazardous materials.

GLOSSARY

ActivFire Register of Fire Protection Equipment

ActivFire Register of Fire Protection Equipment published by Scientific Services Laboratory (SSL), part of the Manufacturing and Technology Division of the Commonwealth Scientific and Industrial Research Organisation, division of Manufacturing and Infrastructure Technology (CSIROMIT). Copies of the *ActivFire Register of Fire Protection Equipment* are available for viewing and downloading from the ActivFire website at <http://www.activfire.gov.au>.

Asset Protection Zone

An area between an asset and a bushfire hazard where bushfire fuel has been reduced significantly to protect the asset.

BCA

Building Code of Australia. The BCA that is applicable is the one that is adopted by the Australian Government at the time of *Building Approval*. This includes relevant State and Territory appendices.

Building Approval

Stage at which written certification of final designs and specifications have been provided before construction commences in accordance with certification process in [chapter 26—‘Alternative design solutions, dispensations and certification for defence projects’](#).

Change-in-use

A change in building occupancy classification as defined in part A3 of the BCA, or where a building’s use, function, contents or *Asset Classification* changes and there is no change to the building’s *Occupancy Classification*.

Demountable Buildings

Buildings which are constructed in sections in a factory and the components are transported to a site where they are reassembled. Demountable buildings are usually installed on stumps as either temporary or permanent buildings.

Detection system

A system which detects the presence of smoke and/or fire to sound a local alarm and alert the fire service.

Fire Danger

The difficulty in suppressing a fire, based on fuel hazard and weather variables.

Fire Safety Engineer

Person who is deemed as being competent in the specific area of practice of fire safety engineering. The registration of fire safety engineers in Australia varies from State to State and the following are appropriate accreditation for carrying out fire engineering work for Defence:

- a. listed on the National Professional Engineers Register (NPER) maintained by The Institution of Engineers, Australia, for the area of practice of Fire Safety Engineering;
- b. registered as a Fire Safety Engineer with the appropriate State or Territory body; and the MFPE [chapter 3—‘Building emergency warning systems’](#);
- c. in a State or Territory where registration for the area of practice of Fire Safety Engineering is not available, fire safety engineers shall be either NPER listed or hold appropriate registration for the area of practice of Fire Safety Engineering in another State or Territory; and
- d. in addition to the above listed registration requirements, fire safety engineers may also require other State or Territory registration before they can practice in the relevant State or Territory.

Fire Safety Provisions of the BCA

A reference to the fire safety provisions of the BCA is a reference to sections A, C, D (parts D1, D2), E and parts G3, G5, H1 and I1.

First attack firefighting appliances

Fire hose reels, fire-extinguishers and fire blankets.

Hangar

The whole complex including *Hangar Aircraft Area* and *Hangar Annex*.

Hangar Aircraft Area

Any part of a hangar where aircraft may be parked and any adjacent area not divided from that area by fire walls or open space in which fuel vapours can dissipate.

Hangar Annex

A building space that is part of a *Hangar* attached to a *Hangar Aircraft Area* containing servicing or repair facilities building services and plant and accommodation associated with them and the aircraft area.

Hangar Open Shelter

A covered area that is used solely for parking of aircraft. The shelter must have no internal walls and not less than two opposing unenclosed walls.

Heritage Building

All buildings of cultural significance having aesthetic, historic and scientific or social value for past, present or future generations' which are either listed in or proposed for listing in the National and Commonwealth Heritage lists and the register of the National Estate, classified as being of Heritage significance by a State or Territory government or heritage related body such as the National Trust.

Living-in Accommodation (LIA)

A residential building as defined in the BCA, other than a Class 1a building. This includes 1b, 2 and 3 occupancy classifications. Defence has two categories of LIA being permanent and transient. Transient accommodation is designated at a site for temporary or ad-hoc accommodation.

New Construction

All new building works, refurbishments, alterations and additions and work in relation to the erection, alteration or demolition of a building.

Related persons

Defence considers that service personnel are related for the purpose of the determination of the requirements for BCA defined sole-occupancy units.

Recommended

Desirable but not required.

Required

Required to satisfy the requirements of the MFPE, a performance requirement or deemed-to-satisfy provision of the BCA.

Special Risk

Special risks are those where the processes within a facility involve the risk of explosion, the rapid propagation of fire or the generation of noxious gases which could pose a significant life risk to occupants and firefighters, or the risk of destruction of the asset before effective firefighting occurs. Examples of special risk service facilities are explosives stores, paint spraying booths, flammable liquids stores, engine hydraulic and high pressure fuel test stands and missile maintenance facilities.

Stores Building

BCA defined class 7b buildings and includes structures used primarily for storage.

Substantial Alteration

An alteration or addition of a building is a Substantial Alteration if the total floor area of the proposed alteration or addition is more than 50 per cent of the floor area of the original building in any three-year period prior to Building Approval. However, neither refitting a building nor replacing the internal elements of the building is an alteration of the building unless the layout and function of the internal spaces of the building are changed.

Suppression System

A system which detects a fire to sound a local alarm, alert the fire service and discharge an extinguishing medium onto the fire.

Transportable Buildings

A small single storey building manufactured in a factory and transported to a site in one piece. Transportable buildings can be skid mounted or installed on stumps and are generally used to provide temporary accommodation of some kind.

Workshop

BCA defined class 8 buildings and includes structures used primarily for engineering and workshop activities.

ACRONYMS AND ABBREVIATIONS

AAF	Alarm Acknowledgement Facility
A/DEEP-FS	Assistant Director Estate Engineering Policy—Fire Safety
ADF	Australian Defence Force
AFFF	Aqueous Film Forming Foam
ASEPE	Assistant Secretary Estate Policy and Environment
BCA	Building Code of Australia
BOWS	Building Occupant Warning System
CDS	Commonwealth Disability Strategy
CIE	Control Indicating Equipment
CSIRO MIT	Commonwealth Scientific and Industrial Research Organisation
CSP	Commercial Support Program
DAP	Disability Action Plan
DBEP	Designated Building Entry Points
DSCSM	Defence Construction Security Manual
DDA	Disability Discrimination Act
DEEP	Director Estate Engineering Policy
DEMS	Defence Estate Management System
DEO	Defence Equity Organisation
DES	Directorate of Explosives Safety
DEWHA	Department of Environment, Water, Heritage and the Arts
DSG	Defence Support Group
DSO	Defence Support Operations
ECC	Emergency Control Committee
ECO	Emergency Control Organisation
ECR	Emergency Control Room
EEPD	Estate Engineering Policy Directorate
EMS	Environmental Management System
EOD	Explosives Ordnance Disposal
EO	Explosive Ordnance
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act</i>
ERP	Emergency Response Plan
ESH	Explosive Storehouse
ESTC	Explosive Storage and Transport Committee
EWIS	Emergency Warning and Intercommunication System
FEB	Fire Engineering Brief
FIP	Fire Indicator Panel
FRL	Fire Resistance Level
FSO	Fire Safety Officer
IAD	Infrastructure Asset Division
ID	Infrastructure Division
ISO	International Standards Organisation
MFPE	Manual of Fire Protection Engineering
NATO	North Atlantic Treaty Organisation
NFPA	National Fire Protection Association (USA)
NPER	National Professional Engineers Register
OHS	Occupational Health and Safety
OIC	Officer-in-charge
PFOS	Perfluoro-octanyl Sulfonate
REO	Regional Environment Officer
SA	Standards Australia
SCEC	Security Construction Equipment Committee
SSISEP	Sound System and Intercom System for Emergency Purposes

MFPE

6

TEDCEP

Technical Equipment for Disabled Commonwealth Employees Program

URB

User Group Brief