



**ENGINEERS
AUSTRALIA**

Society of
Fire Safety

**Practice Guide
for
Fire Safety in Partially Occupied
Buildings**

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Prepared by
Society of Fire Safety
Engineers Australia

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This document has been produced by the Society of Fire Safety to provide guidance regarding fire safety in partially occupied buildings. The document has been developed based on input from the specific SFS committee tasked with producing this guidance. The committee chair was Amer Magrabi and the document authors were Chris Macdonald and Oliver Gibson.

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1. Preamble

Maintaining fire safety in occupied buildings whilst construction work is being undertaken is currently not covered by planning legislation. Guidance regarding how to evaluate and maintain appropriate levels of fire safety in occupied buildings impacted by construction work appears to be lacking.

This Practice Guide is intended to outline a risk assessment methodology for evaluating fire safety impacts of construction work on fire safety in an occupied building and provide technical guidance to assist in undertaking the assessment.

The fire safety engineer has a role to play with respect to evaluating and providing appropriate measures for partially occupied buildings for the benefit of the building stakeholders, including those who shall be most at risk from a fire within the building, its occupants.

2. Background and context

When construction work interfaces with occupied areas of a building, the expected fire hazards and associated risk become more complex. Furthermore, as a result of construction work, the existing level of fire safety in the building may be impacted by the construction work which may result in a reduced level of fire safety to occupants in the building.

This interim condition whilst work is being completed in a partially occupied building is typically not considered during the fire safety design process, which instead focuses on the defined level of fire safety at the completion of each discrete stage of construction.

The responsibility to consider the interim fire safety condition during construction typically rests with the person responsible for the safety of the occupants within the partially occupied building (person(s) conducting a business or undertaking (PCBU)). The responsible persons can often be assisted by fire safety engineers in evaluating the risk and implementing control measures to mitigate the risk as a result of the construction work.

This document sets out the context around fire safety in partially occupied buildings, a process that can be applied when evaluating the impact of construction work on fire safety in partially occupied buildings and provides high level technical guidance to assist in the evaluation of the risk.

2.1. Relevant stakeholders

Fire safety in a partially occupied building is important to the stakeholders in a building. This is because each stakeholder will have a vested interest in having an appropriate level of fire safety in the partially occupied building arrangement. Therefore, fire safety in partially occupied buildings is of importance to the following stakeholders for the following reasons:

- **PCBUs** who may have statutory duties regarding the protection of the health and safety of occupants within the building.
- **Fire safety engineers** who may have an interest in industry practice for fire safety in partially occupied buildings and may be appointed to assist the PCBU / contractors in fulfilling their obligations with respect to fire safety in partially occupied buildings.
- **Building contractors** who may have statutory duties/contractual obligations regarding the protection of the health and safety of occupants within the building
- **Other professionals** who may have an interest in industry practice for fire safety in partially occupied buildings and may be appointed to assist the PCBU in fulfilling their obligations with respect to fire safety in partially occupied buildings.
- **Approval authorities** who may have an interest in industry practice for fire safety in partially occupied buildings and may be appointed to assist the PCBU / contractors in fulfilling their obligations with respect to fire safety in partially occupied buildings.
- **Local authorities** who may have an interest in understanding industry practice with respect to fire safety in partially occupied buildings.
- **Fire brigade** who may have an interest in understanding industry practice with respect to fire safety in partially occupied buildings given their role in fire and rescue operations.

- **Occupants/Society** who are the persons ultimately likely to suffer the consequences of inadequate fire safety in a partially occupied building which may be as a result of construction work impacting on the fire safety arrangement in the building if not evaluated and mitigated.

2.2. Legislative standing

This document can be viewed as an industry practice guidance document in relation to fire safety in partially occupied buildings.

It is considered supplementary to any codes of practice in existence in the respective states/territories.

Adherence to this document provides a means of evidencing good practice with respect to undertaking evaluations of fire safety in partially occupied buildings

2.3. Scope

The purpose of this document is as follows:

- To outline the legislative requirements (at the time of writing) with respect to fire safety in partially occupied buildings in the states/territories across Australia
- To outline a process that can be applied for evaluating the risk and developing fire safety control measures to address the risks irrespective of legislative requirements
- To outline technical guidance in relation to fire safety requirements which can assist in the evaluation of risk and development of an interim fire safety strategy.

The overall aim of this document is to clearly outline the legislative requirements and provide a process with technical guidance for the evaluations of fire safety in partially occupied buildings with respect to the occupied portion of the building. This is intended to assist in providing greater clarity and ultimately consistency in the undertaking evaluations with respect to fire safety in partially occupied buildings.

3. Definitions

Building Code of Australia (BCA) – the building code used in Australia as contained within the National Construction Code.

construction work – any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning, or dismantling of a structure.

contractor – the principal contractor engaged by the PCBU (or representative) who is responsible for the construction site, including overseeing works done by sub-contractors.

designer – a person who conducts a business or undertaking that designs a plant, substance or structure that is to be used, or could reasonably be expected to be used, as, or at, a workplace.

duty – as relating to health and safety duties under the Health and Safety legislation.

duty holder - a person conducting a business or undertaking who has a duty under the relevant state-based Health and Safety legislation.

employer – a person or organisation that employs people.

event – a single instance of ‘construction work’ as defined above.

fire brigade – the fire service having jurisdiction in each Australian State and Territory.

fire hazard – the danger in terms of potential harm and degrees of exposure arising from the start and spread of fire, and the smoke and gases that are thereby generated

fire safety engineer – an appropriately qualified and experienced practitioner who, through sound and robust engineering practice, provides services that achieve reductions of risk for life for people in structures, reduction in property and environmental damage from structure fires, and the implementation of fire safety codes and regulations.

hazard – a potential source of harm.

hazard in relation to fire prevention – hazards that may cause a fire to occur.

hazard in relation to fire protection – hazards that are present if a fire occurs

Health and Safety – as relating to Health and Safety Legislation or any alternative nomenclature used for this legislation in each respective state/territory. See Appendix A for a summary of the applicable legislation for each Australian state and territory.

interim measure in relation to fire prevention – precautions designed to prevent or reduce the likelihood of fire arising from such a work process or reduce its intensity.

interim measure in relation to fire protection – precautions designed to reduce the impact of fire should a fire event occur.

PCBU – Person(s) conducting a business or undertaking as is relating to the Health and Safety legislation for the respective state/territory. This may be the owner, lessee, or occupier of the building depending on the ownership of the building.

risk – the product of the likelihood of an event occurring and the consequence of that event.

risk assessment – a systematic process of identifying hazards and evaluating the risks arising from them in relation to an activity or undertaking.

4. Application

This document is intended to be applied where construction work shall be, or is being, undertaken on or within a partially occupied building (new or existing) where the pre-construction documented level of fire safety (documented in items such as fire safety schedule(s) / fire safety engineering report(s) / occupancy documentation which may be for interim occupation or final occupation conditions) is reduced or compromised as a result of that construction work.

For example, this may occur:

- During the construction of a development involving both new and existing buildings
- During the fit-out/refurbishment involving both new and existing buildings

It does not cover fire safety arrangements on construction sites because this is considered to be the responsibility of the contractor and each employer on the site under the relevant Health and Safety legislation of each respective state/territory with guidance provided within relevant codes of practice.

The application of this document is for life safety assessment of fire safety risk only. It does not consider items in relation to property protection, business continuity, or any other elements outside of fire and life safety.

This document should be used by fire safety engineers but may provide a useful reference guide for other persons with fire safety engineering responsibilities, such as:

- Those with statutory duties for the safety of occupants in partially occupied buildings where, as a result of construction work, the documented (pre-construction) level of fire safety is proposed to be impacted.
- Appropriately experienced engineers and practitioners who do not have statutory duties but are commissioned to assist those with statutory duties for the safety of occupants in partially occupied buildings where, as a result of construction work, the documented level of fire safety may be impacted.

This guide may be applied in a number of situations and is not expressly limited in its application however the user, who is assumed to have duties as a professional with respect to fire safety must satisfy themselves that this guidance is appropriate for their intended use.

This guide is provided only with respect to fire safety however its principles may be of use to other disciplines regarding their own respective considerations of risk for partially occupied buildings.

5. Legislation

In Australia the two predominant streams of legislation applicable to fire safety in partially occupied buildings are the building (or planning) legislation and the Health and Safety legislation.

Each stream of legislation is governed by specific provision in each State and Territory, however the themes within the state-based guidance are broadly applicable across Australia. These streams of legislation are summarised in the following sections to provide context for where this Practice Guide operates. A summary of the state specific legislation and regulations can be found in 8.Appendix A.

An outline of the key duty holders, duties and duty holder processes is then outlined, followed by a summary of relevant guidance documents.

5.1. Building legislation

The building legislation sets out the required discrete stages for the approval, construction, and occupation of a building or structure.

Under the state-based building legislation, a building must first undergo a planning approval process. Then, when the building design is developed to a level of detail where approval from all relevant authorities and stakeholders are obtained, construction can be commenced. At this stage, there is a documented set of fire safety measures that are to be provided in the building. Upon completion of construction, including installation and commissioning of the fire safety measures, if the completed works are to the satisfaction of all relevant authorities and stakeholders, the building is allowed to be occupied.

The state-based building legislation does not permit utilising a risk assessment approach to demonstrate whether the level of fire safety within a particularly occupied building is maintained whilst building works are undertaken within the building. Instead, the building legislation requires that each building (or part) be certified as complying with the conditions of the relevant building approval for that building (or part). Note, whilst maintenance works are included under the definition of ‘construction works’ in the Health and Safety legislation, maintenance works are not considered as ‘building works’ under the building legislation. The building legislation does require maintenance of fire safety systems and it is recognised that due to maintenance works there may be a shortfall in the level of fire protection provided. However, this is typically recommended to be undertaken in accordance with AS 1851 which outlines a risk assessment approach, recognising that this is not an adopted legislative standard and therefore not mandatory.

5.2. Health and Safety legislation

The Health and Safety legislation is the principal legislation regarding work health and safety in Australia and imposes general duties on employers and others for the reduction of risk to persons at a place of work. In each state or territory, the Health and Safety Act is supported by the Health and Safety Regulations. The Health and Safety legislation identifies that where part of the fire protection and fire-fighting equipment become unserviceable or inoperable the implications of this must be assessed and alternative measures taken to manage the risks.

Construction work is defined as any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishment, demolition, decommissioning or dismantling of a structure. This is work that is carried out between or outside of the discrete stages set out in the building/planning regulations. By definition, the building is in a transient state throughout the undertaking of any such construction work and the level of fire safety will vary depending on the progress of the construction work.

Under the Health and Safety regulations, there is a requirement to ensure that employees, and non-employees legally entitled to be within a workplace, are provided with an acceptable level of safety in the workplace at all times. The Health and Safety regulations provide and permit a risk assessment approach as a means of fulfilling health and safety obligations to building occupants (for all duty holders).

It is noted that the need to provide for the safety of persons occupying buildings whilst construction work is taking place may arise under common law, Health and Safety legislation, an insurance policy or other sources.

The relationship between the building planning legislation and the Health and Safety legislation is illustrated graphically in the flow chart in Appendix A.2.

5.3. Duty holder, duties and duty holder processes

5.3.1. Duty holders and duties

The Health and Safety legislation set out the responsibilities of duty holders for the design, construction and operations of a building or structure. Specifically, the following duty holders and duties relevant to fire safety are outlined within the Health and Safety legislation:

- **PCBU:** The PCBU has a duty under legislation to provide a safe place for those who work within their building or structure, as well as for those who visit their building or structure. This duty extends to anyone who may access their building, which in the event of construction work, includes the contractor and their subcontracted staff.
- **Contractor:** The contractor has a duty (as an employer), under legislation to provide a safe place for those who work within their site, as well as for those who visit their site. Within buildings where partial occupation is proposed during construction, a clear distinction must be made around those areas of the building that are deemed to be within the 'construction site' and as such fall under the duty of the contractor.
- **Designer:** The building designers (which includes any engineer involved throughout the design process, including fire safety engineers) have a duty under legislation to provide a design which is, so far as is reasonably practicable, without risk to the health and safety of persons. Designers must give adequate information to each person who is provided with the design particularly concerning any conditions necessary to ensure that the design is without risks to health and safety when used for its intended purpose.

This Practice Guide purports that the role of the fire safety engineer is as a specialist to advise on the risk assessment process as set out in the Health and Safety Regulations (see Section 6) specifically relating to building fire safety. In undertaking this role, the fire safety engineer

may assist the PCBU and/or the contractor to fulfill their respective duties related to fire safety under the Health and Safety legislation.

All duty holders have a duty to communicate risks to the PCBU as they are made aware of them, as well as duty to coordinate and cooperate throughout the development of any Health and Safety Management Plan.

The duties as stipulated by the Health and Safety legislation are non-transferable.

5.3.2. Duty holder processes

The Health and Safety legislation provides a framework by which duty holders can fulfil their duties throughout the construction process. Specifically, the Health and Safety Regulations provide a structure for workplace risk assessment and action within workplaces.

The Health and Safety Regulations require duty holders to establish a baseline level of life safety for the areas which they are responsible for, which involves the creation of a Health and Safety Management Plan and a risk assessment approach.

- **PCBU:**

It is the responsibility of the PCBU to undertake this process for the daily operation and management of their building or business, in the absence of any construction work. This responsibility of employers is not reduced when another party carries out building works to or within a building.

Each time an 'event' occurs in the development such as the erection of a construction site or a significant change to construction activities, it is the responsibility of the PCBU to re-assess the risks and the level of life safety within the building, remove or mitigate any identified risks as reasonably practicable, and establish a new baseline level of life safety.

The PCBU may wish to undertake such a process themselves, which would need to consider the fire safety management plan for the building. Alternatively, the PCBU may appoint a specialist (fire safety engineer) to assist with and document this risk assessment process.

- **Contractor:**

Similarly, it is the responsibility of contractor to develop a Health and Safety Management Plan and undertake a risk assessment at the erection of a construction site for the daily operation and management of the site.

Each time an 'event' occurs on site, it is the responsibility of the contractor to risk assess the level of life safety within the construction site, remove or mitigate any identified risks as reasonably practicable, and establish a new baseline level of life safety for the construction site. Where the establishment of a construction site is known to impact on the level of fire safety of the occupied portions of a partially occupied building, the contractor should make this known to the PCBU. Whilst owners and contractors have separate responsibilities, there is a need for coordination and cooperation throughout this process as per the Health and Safety Regulations.

The contractor typically undertakes this risk assessment independently through coordination and collaboration with the PCBU. The contractor may choose to engage a

specialist (fire safety engineer) to assist with this risk assessment process to assess the level of life safety to construction site occupants specifically, however this is not within the scope of this Practice Guide.

- ***Fire safety engineer*** (as a ***Designer***):

The fire safety engineer can play a role in assisting the PCBU or the contractor in the risk assessment process for construction within a partially occupied building.

The process followed by the fire safety engineer has the same requirements under the Health and Safety legislation of developing a Health and Safety Management Plan through a risk assessment approach. As specialists, fire safety engineers can input into this plan specifically in relation to fire safety requirements. The fire safety engineer is ideally placed to consider those risks as professional engineers.

The involvement of fire safety engineers promotes confidence in the safety outcomes for all building occupants, that are passed down and enforced at the site level by the head contractor.

The processes outlined in this section are illustrated graphically in the flow charts in Figure 1 and Figure 2 for the PCBU and the contractor respectively.

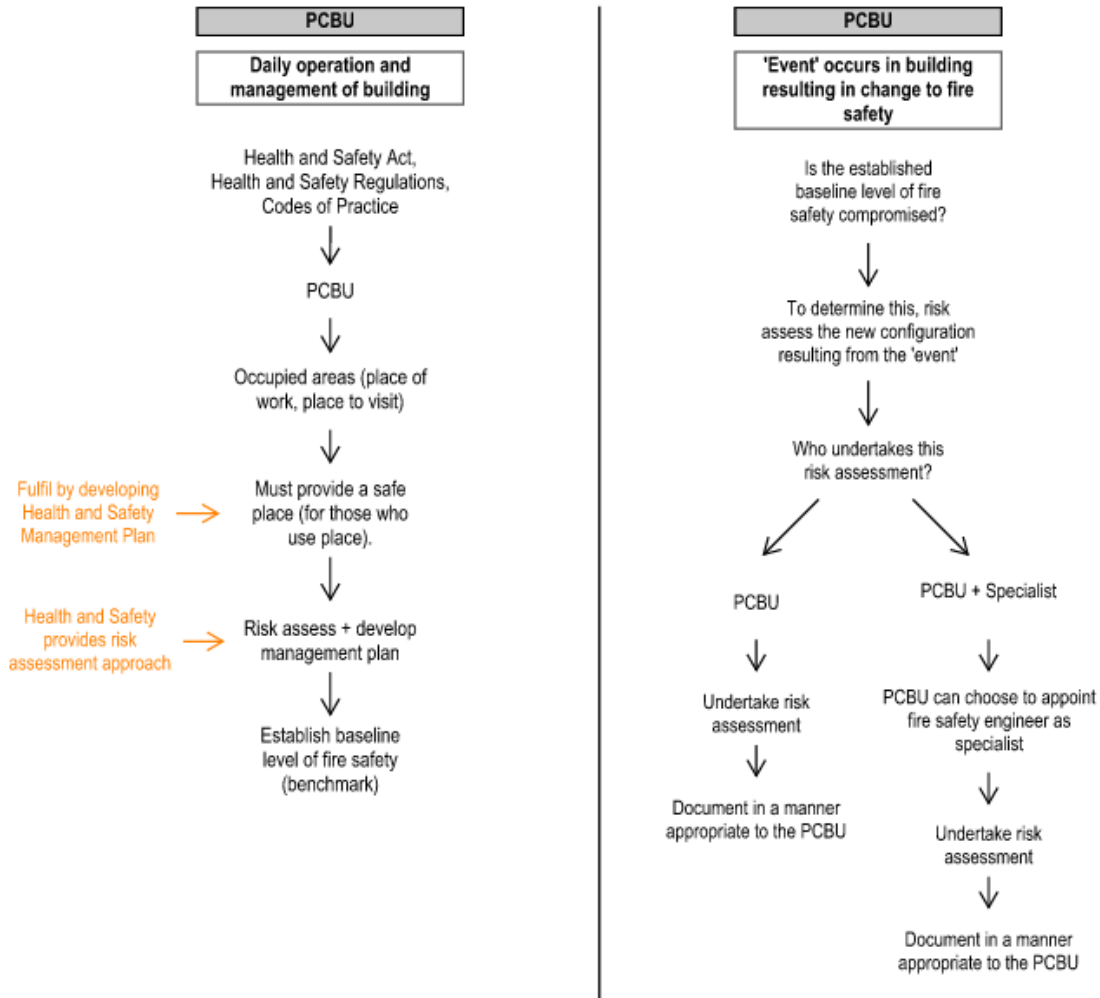


Figure 1: Duty holder processes for PCBU

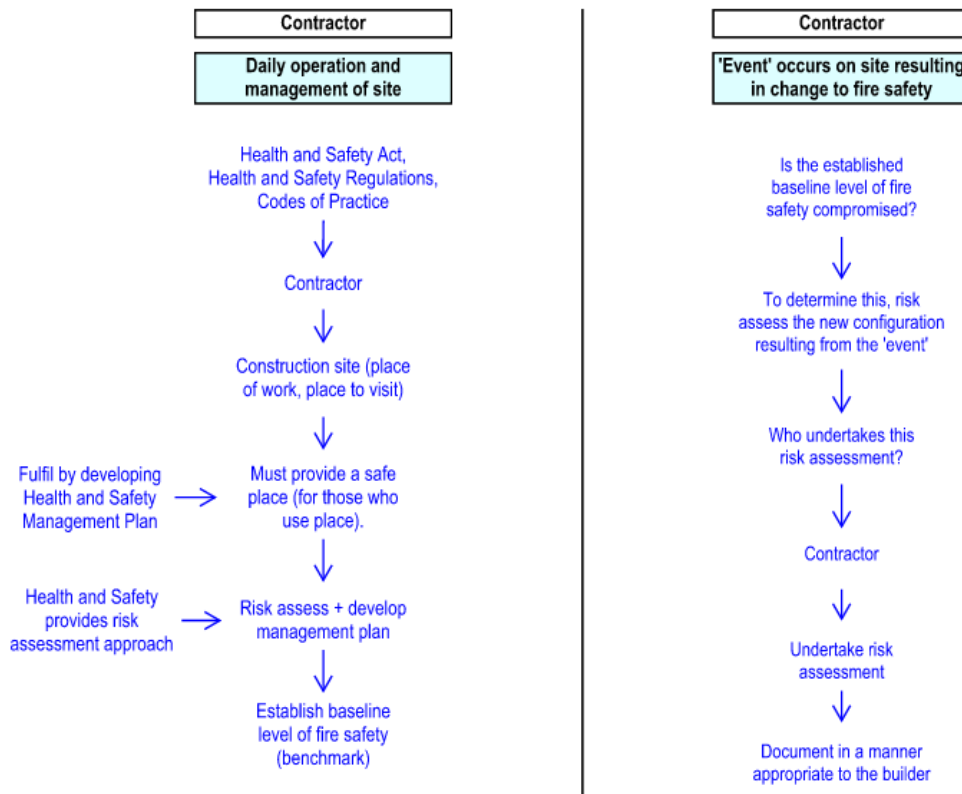


Figure 2: Duty holder processes for contractor

5.4. Relevant guidance

There are a number of guidance documents available that can be used to aid in the preparation of a fire safety risk assessment during construction. This guidance helps to inform the duties outlined in the Health and Safety Act and Regulations for each of the states/territories. Several relevant documents are noted as follows:

- **This Practice Guide:** The intention of this guide is to assist in the preparation of an Interim Fire Safety Strategy (IFSS) for a building with partial occupation during construction work. This Practice Guide contains information on the risk assessment process as well as key fire safety considerations throughout the IFSS process.
- **Health and Safety Code of Practice:** The Health and Safety Code of Practice is provided to assist with the implementation of the Health and Safety Regulations by outlining the risk assessment approach in greater detail. This risk assessment approach is outlined in detail in Section 6.
- **BCA:** The BCA addresses fire safety during construction to a limited extent in Clause E1.9 and Performance Requirement EP1.5, which specifies the fire services it expects to be provided on site as construction work progresses. It is noted that this advice is only applicable to completed building design work (final or partial) that is required to comply with the BCA and as such may not be relevant to construction work being undertaken within existing partially occupied buildings. The BCA Performance Requirements may, as appropriate, be used as a benchmark level of fire safety to aim towards for interim arrangements during construction.

- **HSG 168:** This is the principal guidance document in relation to construction work being undertaken in the UK. It contains recommendations relating to fire safety measures during construction, as well as further detail on the risk assessment process as set out in the UK Health and Safety legislation.
- **NFPA 241:** Standard for Safeguarding Construction, Alteration, and Demolition Operations. This is the principal guidance document in the USA for construction fire safety. This standard can be used for both new and existing buildings and provides a checklist type assessment methodology and requirements for fire safety during construction work.

The relationship of the Health and Safety Legislative framework and this accompanying guidance documentation is summarised in Figure 3.

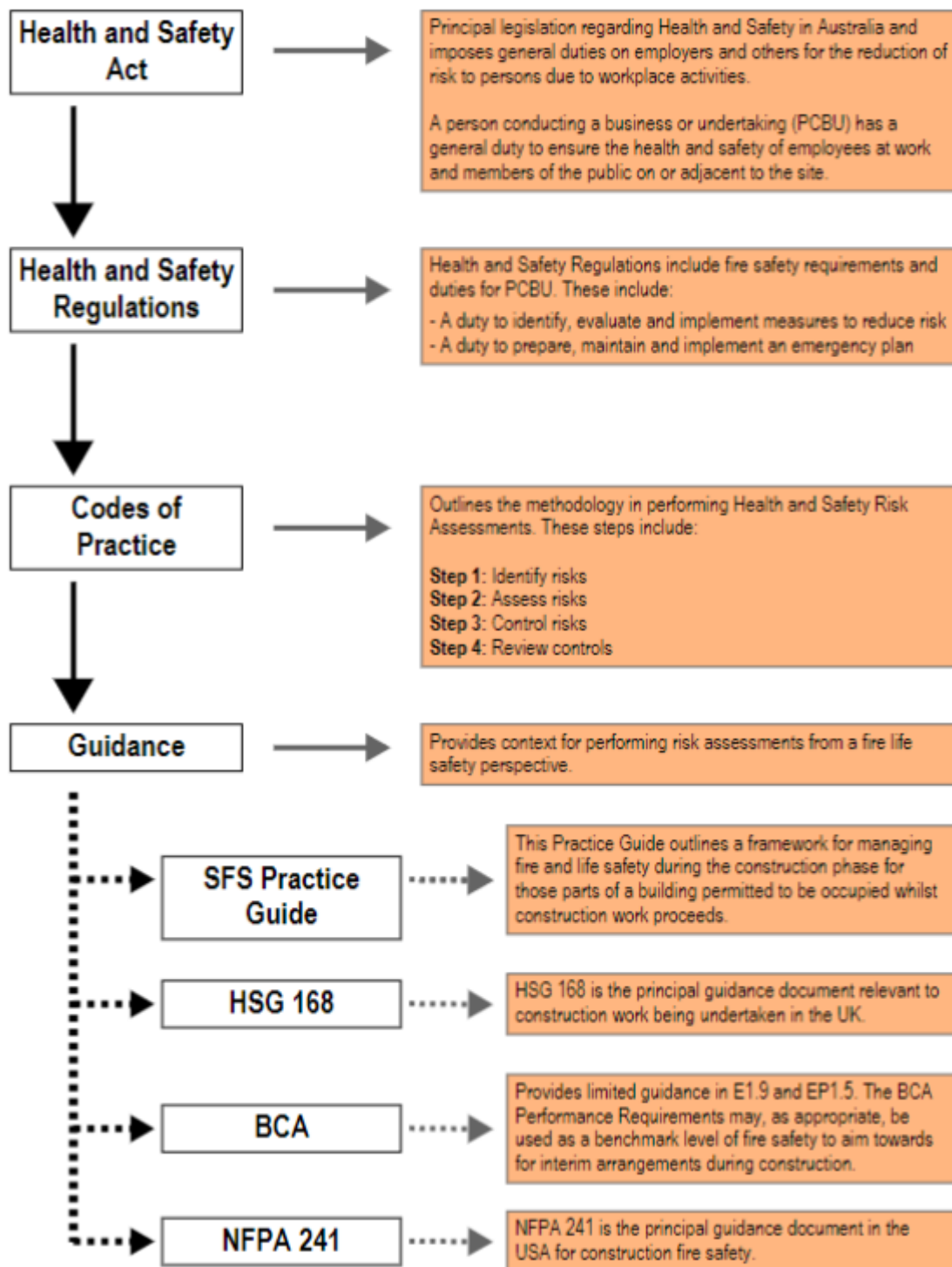


Figure 3: Relationship of relevant guidance and Health and Safety legislation

6. Process

A fire safety assessment for a partially occupied building should be undertaken using a risk assessment approach. There are a number of methods available for undertaking a risk assessment, however the risk assessment process outlined in ISO 31000 (2018) is used here as internationally recognised good practice. This involves the following steps:

- **Risk understanding** - The purpose of risk understanding is to identify the scope, relevant persons, context and criteria. This is fundamental to enabling the subsequent risk assessment process.
- **Risk identification** - The purpose of risk identification is to find, recognise and describe risks relevant to the project objectives. Risk identification should focus on identifying potential hazards under the following broad categories:
 - Hazard in relation to fire prevention – hazards that may cause a fire to occur; and
 - Hazard in relation to fire protection – hazards that are present if a fire occurs.
- **Risk analysis** - The purpose of risk analysis is to comprehend the nature of the risk and its characteristics. Risk analysis should focus on appraising the level of risk presented by the identified hazard.
- **Risk evaluation** - The purpose of risk evaluation is to support decisions. Risk evaluation should evaluate the results of the risk analysis to determine whether the risk can be eliminated or practically reduced. Where additional action is required this should consider the hierarchy of controls and determine what those additional actions may be and how these impact on the level of risk. The additional actions where elimination or substitution is not possible may be considered under the following categories:
 - Interim measure in relation to fire prevention - precautions designed to prevent or reduce the likelihood of fire arising; and
 - Interim measure in relation to fire protection – precautions designed to reduce the impact of fire should a fire event occur.
- **Reporting** - The purpose of reporting is to document and communicate information and outcomes from the risk assessment process to the relevant persons. The relevant persons should have been identified at the risk understanding stage.
- **Monitoring and review** - The purpose of monitoring and review is to confirm the appropriateness and effectiveness of this process and the interim fire safety strategy proposed.

How these steps can be applied to a risk assessment approach to partial occupation is described in detail in Appendix B and the process is illustrated in Figure 4.



Figure 4: Risk assessment process for fire safety in partially occupied buildings

7. Technical Guidance

When applying the risk assessment approach outlined in Section 6 and developing an IFSS, the following steps should be undertaken with regards to the risk evaluation:

- Identification as to whether the risk can be eliminated, substituted or isolated to mitigate the need for engineering controls. Where this is not possible then:
- Identification of different fire precautions that should be considered. Fire precautions are subdivided into:
 - Interim measure in relation to fire prevention covering ignition, fuel sources and oxygen sources; and
 - Interim measure in relation to fire protection covering means of detection, warning, egress, first aid fire-fighting, restricting fire spread and structural fire protection, suppression, smoke hazard management, fire brigade access and intervention, and fire safety management and actions in the event of a fire.
- Identification of the associated key principle of fire safety and the intent for each identified fire precaution. The identified ‘key principle’ is the recommended standard of performance that is to be achieved in the IFSS.
- Identification and description of the fire safety strategy to reduce the identified risk and achieve the key principles for an interim fire safety arrangement. This is the documented outcome of the risk assessment.

Appendix C provides specific technical guidance for each of the items identified above. The guidance contains the nature of the fire hazard and the associated precautions, key principles for each precaution that are recommended to be met, the intent of each key principle, and guidance on how each key principle may be achieved.

The guidance provided is not exhaustive as it is recognised that there are likely many different methods of demonstrating that the required level of fire safety has been met.

When considering the technical guidance, the user should satisfy themselves as to what is the required level of safety and what are the necessary measures to achieve that level of safety.

A level of technical competency is required by the user when undertaking this work and applying this guidance.

8. Conclusion

Fire safety engineering can play an important role in providing for the health and safety with respect to fire safety within partially occupied buildings. This in turn helps all parties with responsibilities for fire safety in partially occupied buildings to fulfil their duties under the Health and Safety legislation.

Adherence to the principles and process outlined in this Practice Guide will provide a means of undertaking a risk assessment process and providing fire safety advice for partially occupied buildings.

Appendix A. Legislation guidance

A.1. State specific legislation and regulations

The following section outlines the applicable legislation and regulations for each respective state at the time of authoring this guidance document.

It should be read as a guide only and not an exhaustive review of all relevant legislation.

Legislation is continuously being updated and it is the responsibility of the fire safety engineer/any user of this document to understand and comply with their relevant legislative obligations.

Table 1 outlines the relevant building/planning legislation for each respective state.

Table 1: Relevant building/planning legislation

State	Relevant legislation
New South Wales	NSW Environmental Planning & Assessment Act 1979 NSW Environmental Planning & Assessment Regulation 2021 NSW Environmental Planning & Assessment (Development Certification and Fire Safety) Regulation 2021 NSW Building and Development Certifiers Act 2018 NSW Building Development Certifiers Regulations 2020 NSW Design and Building Practitioners Act 2020 NSW Design and Building Practitioners Regulation 2021
Victoria	Victorian Building Act 1993 Victorian Building Regulations 2018 Professional Engineers Registration Act 2019
South Australia	Planning, Development and Infrastructure Act 2016 Planning, Development and Infrastructure Regulations 2017 State Planning Commission Practice Direction 10 (Staged occupation of multi-storey buildings) 2020
Tasmania	Tasmania Building Act 2016 Tasmania Building Regulations 2016
Western Australia	Western Australia Building Act 2011 Western Australia Building Regulations 2012
Queensland	Queensland Building Act 1975 Queensland Building Regulation 2006

State	Relevant legislation
Australian Capital Territory	ACT Building Act 2004 ACT Building Regulations 2008
Northern Territory	Northern Territory Building Act 1993 Northern Territory Building Regulations 1993 Northern Territory Fire and Emergency Act 1996 Northern Territory Fire and Emergency Regulations 1996

Table 2 outlines the relevant health and safety legislation for each respective state.

Table 2: Relevant health and safety legislation

State	Relevant Legislation
New South Wales	NSW Work Health and Safety Act 2011 NSW Work Health and Safety Regulation 2017
Victoria	Victorian Occupational Health and Safety Act 2004 Victorian Occupational Health and Safety Regulations 2017
South Australia	South Australia Work Health and Safety Act 2012 South Australia Work Health and Safety Regulations 2012
Tasmania	Tasmania Work Health and Safety Act 2012 Tasmania Work Health and Safety Regulations 2012
Western Australia	Western Australia Occupational Safety and Health Act 1984 Western Australia Occupational Safety and Health Regulations 1996
Queensland	Queensland Work Health and Safety Act 2011 Queensland Work Health and Safety Regulation 2011
Australian Capital Territory	ACT Work Health and Safety Act 2011 ACT Work Health and Safety Regulations 2011
Northern Territory	Northern Territory of Australia Work Health and Safety (National Uniform Legislation) Act 2011 Northern Territory of Australia Work Health and Safety (National Uniform Legislation) Regulations 2011

A.2. Relationship between legislation streams

Figure 5 summarises the relationship between the building legislation and the Health and Safety legislation throughout the various different stages of construction. This is intended to highlight the role that the building legislation plays in defining the level of fire safety required at each discrete stage of the planning and building process, which is in contrast to the role that the Health and Safety legislation plays throughout the transient periods when construction work is being undertaken.

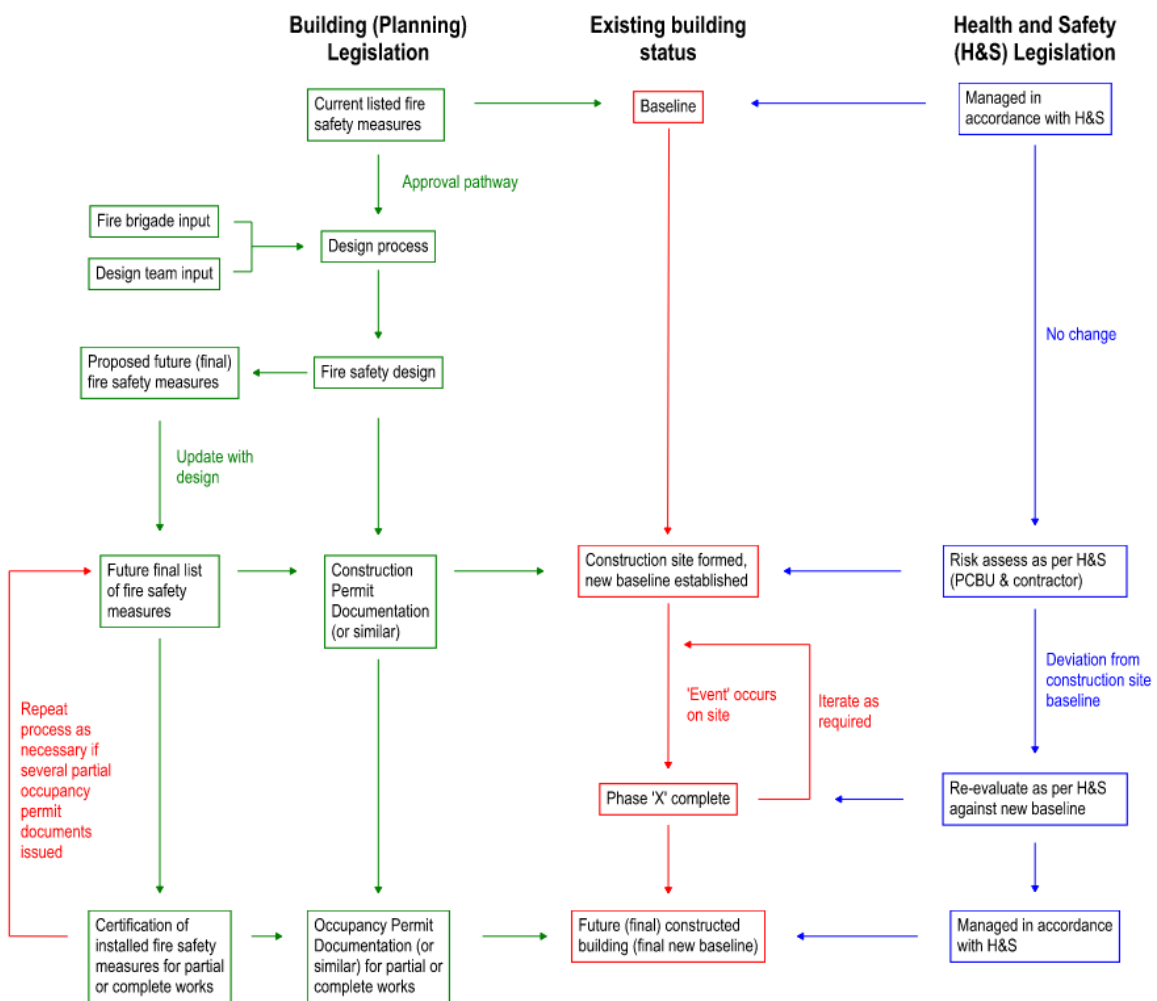


Figure 5: Flowchart of relevant legislation throughout construction process

Appendix B. Process guidance

B.1. Risk understanding

The purpose of risk understanding is to identify the scope, context and criteria. This is fundamental to enabling the subsequent risk assessment process.

In the risk understanding stage, the following should be ascertained and documented:

- The relevant stakeholders and duty holders – this is to assist in developing and understanding the relevant parties and communication requirements.
- Any specific project objectives – this is to ensure that the stakeholders’ requirements are considered and included within any risk assessment with respect to fire safety.
- The baseline fire safety arrangement in the building – this is to enable an understanding of the current level of fire safety in the building. This is likely to be the approved level of fire safety which should be used as the benchmark for any subsequent risk assessment.
- The areas of occupation and the person occupying those areas (including any mobility impaired or otherwise impaired persons or arrangements) – this is to enable an understanding of the persons who may be at risk and should form part of the considerations of any risk assessment.
- The proposed construction work – this is to enable an understanding of the construction work including items such as impact on fire safety items (what is impacted), extent of impact (how much is impacted), and duration of impact (how long is it impacted).
- The final design fire safety arrangement – this is to enable an understanding of the fire safety arrangement at the completion of the construction work. This may be relevant in assisting in understanding the level of work and fire safety alteration to the baseline fire safety arrangement.
- Fire safety management procedures/policies – this is to assist in understanding how the building is operated. The baseline fire safety arrangement is likely to be a physical arrangement however an integral part of building fire safety is how it is managed. This should form part of the considerations in any assessment.
- Other organisational procedures/policies – this is to assist in harmonising any fire safety risk assessment with organisational procedures and policies with respect to risk, fire safety, or other relevant items.

The following information may be useful in assisting in risk understanding

- Building fire safety engineering reports (existing and relevant to the proposed construction work where applicable)
- Building BCA compliance reports
- Annual testing/maintenance records
- Annual building fire safety certification
- Cause and effect matrix and block plans (detection, alarm, sprinklers)
- Compartmentation layouts/general arrangement layouts

- Building structure information (concrete, steel, timber)
- External wall information (combustible or non-combustible)
- Fire safety/emergency management plans
- Construction site fire safety plans
- Construction work proposals including staging plans

The outcome from risk understanding shall be a clear understanding of:

- The relevant project stakeholders;
- The project objectives;
- The current and final fire safety arrangements;
- The proposed construction work; and
- The organisational procedures and policies that may impact on the fire safety assessment of the partially occupied building.

B.2. Risk identification

The purpose of risk identification is to find, recognise and describe risks relevant to the project objectives. Risk identification should focus on identifying potential hazards.

Fire safety hazards should be considered with respect to how they may impact under the following:

Hazard in relation to fire prevention:

- Sources of ignition
- Sources of fuel
- Sources of oxygen

Hazard in relation to fire protection:

- Means of detection and warning
- Structure and compartmentation
- Means of egress
- Means of first aid fire fighting
- Fire safety systems
- Fire brigade intervention
- Fire safety management

The output from the risk identification step should be a collated review of the identified hazards which shall then be taken forward in the process.

B.3. Risk analysis

The purpose of risk analysis is to comprehend the nature of the risk and its characteristics. Risk analysis should focus on appraising the level of risk presented by the identified hazard.

The risk analysis should be based on:

- An appraisal of the existing level of fire safety that is provided by the approved fire safety design to the occupied building.
 - This is to understand the current level of fire safety provided to occupants in the building.
- An appraisal of the proposed construction work and the impact this construction work has on the approved fire safety design for the occupied building.
 - This is to understand how the construction work is altering the approved fire safety design.
- An appraisal of the impact of the proposed work on the approved fire safety design.
 - This is to understand the potentially reduced level of fire safety provided.
- An outcome in relation to the impact of the shortfall of the approved fire safety arrangements.
 - This is the conclusion drawn from the risk analysis which is then used in the risk evaluation.

The risk analysis step may involve either, or a combination of, quantified and qualitative analysis methods. The person undertaking the assessment must use judgement based on experience and qualifications and may use the categorisations of risk as a means to assist in evaluation and designation of risk to identified hazards.

B.4. Risk evaluation

The purpose of risk evaluation is to support decisions. Risk evaluation should evaluate the results of the risk analysis to determine where additional action is required, what those additional actions may be, and how this impacts on the level of risk.

The risk evaluation shall result in one of the following outcomes:

1. No further action – this would be where the current level of risk is deemed to be sufficiently low, and no practicable further action is identified that would eliminate or reduce the risk. On this basis, the risk cannot be eliminated or practically reduced any further.
2. Risk control measure – this is where a risk control measure is recommended to be implemented to reduce the risk level. This may be a single control or may be a combination of control measures which form a strategic risk reduction. Where a risk control measure is considered, the hierarchy of controls as outlined in the code of practices for the Health and Safety legislation should be considered.

Where risk control measure is determined to be required, this shall be developed by considering the hierarchy of risk mitigation controls outlined in , which is adapted from the NSW Work Health and Safety code of practice. Where the hazard cannot be eliminated or substituted, control measures may be considered in terms of interim measure

in relation to fire prevention and interim measure in relation to fire protection. For guidance on developing control measures refer to Appendix C.

Hierarchy of Controls

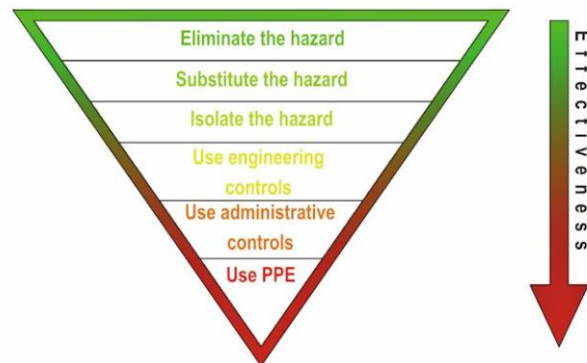


Figure 6: Hierarchy of risk control principles

After the development of a risk control measure the risk analysis should be re-visited to evaluate the level of risk reduction provided. The purpose of this is to demonstrate the appraisal and reduction in risk as well as any residual risk that remains after the implementation of the control measure.

3. Further analysis – this is where insufficient information is readily available to be able to clearly outline no further action or risk control measure. This does not mean that the risk is necessarily acceptable. It is an indication that further information or consideration is required to arrive at a conclusion on the risk.

The identification of each hazard, analysis of that hazard and then evaluation of the risk is helpful to appraise and develop mitigation options. Guidance to assist with this is provided in Appendix C.

B.5. Reporting

The purpose of reporting is to document and communicate information and outcomes from the risk assessment process to the relevant persons. The relevant persons should have been identified at the risk understanding stage.

The documenting of the risk assessment process should effectively communicate the key findings of the risk assessment and detail the required IFSS for the building. The IFSS should be provided to the relevant persons as a record of the process and outcomes from the risk assessment for the interim arrangement.

The IFSS should be reviewed and agreed by all relevant stakeholders. This would typically involve the PCBU / contractor, however may also include other members of the design team as appropriate.

Implementation of the IFSS shall then be the responsibility of all stakeholders involved in this process.

B.6. Monitoring and review

The purpose of monitoring and review is to confirm the appropriateness and effectiveness of the process and IFSS proposed.

On site review of the proposed IFSS throughout the duration of their implementation is recommended to be undertaken. This will typically be the PCBU or contractor or may be the IFSS author. This role should be clearly identified with a responsible person/party appointed to undertake this review.

Should any of the specified IFSS be altered, or prove to not be effectively applied, then the risk assessment should be reviewed and should not be assumed to be applicable until effectively implemented measures can be put in place. The duty to undertake this monitoring and review role should be clearly defined in the IFSS documentation and communicated to the relevant parties.

Appendix C. Technical guidance

The following section outlines technical guidance that may be used to assist in undertaking the risk assessment process as outlined in Section 7 and Appendix B.

In terms of partial occupation for the building, the guidance provided in the following sections is not intended to be provided in relation to building compliance with the BCA. It is assumed that where part of a building is being occupied, an occupancy documentation is required to be issued by the relevant authority and that area of the building will be required to comply with the BCA. It is assumed that in the absence of compliance with the BCA (and any fire safety engineering reports) the area being considered for partial occupation will not be able to attain an occupancy permit.

The guidance in this section is intended in relation to where part of a building is occupied (i.e., where an occupancy permit is in force as issued by the relevant authority) and construction work is being undertaken within the building that may compromise the level of fire safety of the occupied part of the building. This situation is not directly covered by the planning legislation as it is a transient stage of works and therefore a risk assessed approach to maintain an appropriate level of safety shall be undertaken.

C.1. Interim measure in relation to fire prevention

Interim measure in relation to fire prevention are designed to prevent or reduce the likelihood of fire arising from such a work process or reduce its intensity. To prevent or reduce the likelihood of a fire-related to the work process, interim measure in relation to fire prevention will be in place to reduce three main factors that contribute to starting a fire.

The three factors are needed for sustained fire development to occur:

- **source of ignition** - an object, process or an event capable of igniting or conveying a medium to prompt combustion. Common sources of ignition can be items such as hot works, smoking, open flames, electrical equipment, work processes, vehicles, etc.
- **source of fuel** - likely to be substances that contribute to a fire such as wood, paper, powder, foam, waste, chemicals, or furniture.
- **source of oxygen** - includes “fresh air” to sustain a fire and other oxygen storage items such as oxygen from cylinders, tanks of compressed oxygen, and chemicals (oxidising agents).

Table 3: Principal fire precautions technical guidance

Item	Key principle of fire safety	Guidance
Sources of ignition	Ignition risks shall be controlled to reduce the potential for a fire to occur.	<p>In relation to the construction site</p> <ul style="list-style-type: none"> • The contractor has a duty to prepare and maintain a management plan and to reduce risks. One of these risks is fire safety. The contractor should have a documented plan that outlines how they intend to reduce the risk of a fire occurring and how they shall manage fire safety on site. • The responsible person for the occupied portion of the building should have confidence that the contractor is managing fire safety risk on the construction site. This could be through ensuring that fire safety has been addressed in the construction site management plan. <p>In relation to the occupied building</p> <ul style="list-style-type: none"> • The PCBU(s) have a duty to prepare and maintain a management plan and reduce risks. One of these risks is fire safety. • When considering fire safety for a partially occupied building, it is important to have a good understanding of the operational fire safety management plan and how fire safety risks are managed day to day. This is because, there may be reliance on increased fire prevention safety precaution measures as part of an interim solution to address items in relation to interim measure in relation to fire protection. • An item to be aware of is where construction items are present within the occupied part of the building (e.g., a storage compound) as this may increase the risk of fire within the occupied part of the building; or where the construction site is not fire separated from the occupied areas (although this is not advised to occur).
Sources of fuel	Sources of fuel shall be controlled to limit the potential for ignition and mitigate the potential growth of a fire should it occur.	
Sources of oxygen	Additional sources of oxygen shall be controlled to mitigate the potential for rapid fire development by their involvement in a fire event.	

C.2. Interim measure in relation to fire protection

Interim measure in relation to fire protection are designed to reduce the impact of fire and smoke should a fire event occur. As a result of construction work the fire protection precaution arrangements may be impacted. Where this occurs, the impact needs to be assessed and addressed through the risk assessment process. The interim measure in relation to fire protection in the occupied building shall likely comprise of the following (noting that not all interim measure in relation to fire protection may be applicable to every building):

- **Means of detecting a fire** – this is a means of identifying a fire event is occurring
- **Means of warning** – this is a means of alerting occupants that a fire event is occurring to initiate action
- **Means of egress** – this is the means by which occupants evacuate from the building
- **Means of first aid fire fighting** – this is additional features which may assist occupants to evacuate or potentially suppress/extinguish as fire
- **Means of restricting fire spread/structural fire protection** – this is the means that delay a building / parts of a building from collapsing and restrict fire spread through the building
- **Means of suppression** – this is a means of reducing the fire growth and potentially extinguishing the fire event
- **Means of smoke hazard management** – this is a means of reducing the impact of smoke on evacuation and assist in fire-fighting operations
- **Means of fire brigade access/intervention** – this is the means and facilities provided for fire brigade to undertake fire fighting operations
- **Fire safety management/actions in the event of a fire** – this is the means in which operators of occupied buildings manage the building with respect to fire safety and includes items such as inspection, maintenance and staff training

When considering solutions for an IFSS, it is important to understand the building fire strategy as particular fire safety items may be used as significant parts of fire safety engineering justification for other existing arrangements. Furthermore, it is important to take a holistic view of the impact of construction work on the occupied building as often more than a single element of fire safety shall be impacted by the construction work. When developing solutions to identified hazards, it is likely that a number of factors will make up that solution. These cannot be explicitly identified in this guidance and therefore general guidance is provided only. For example, in addressing a specific hazard the interim solution may rely on one or a combination of both increasing interim measure in relation to fire prevention (additional measures to reduce the risk of a fire occurring) and compensatory interim measure in relation to fire protection (any one or a combination of fire protection precaution items). Ultimately, the person undertaking the IFSS must be competent and confident in their understanding of the existing fire safety arrangements so as to be able to evaluate the impact of the construction work and develop reasonable mitigation measures to reduce the identified hazards and risks.

The guidance in this section is provided in relation to maintain fire safety within the occupied portion of the building. It is not intended to provide guidance in relation to maintaining a level of safety within the construction site for persons within the construction site as this is the responsibility of the contractor. The following assumptions however are applied, and if not true should be considered as part of the IFSS discussed with the client prior to proceeding with an interim fire safety solution:

- The building will not be unoccupied in its entirety and therefore there shall be occupants within the building. If it is possible to decant the building, then this is a preferred option from a fire life safety perspective as it removes this risk and removes the legislative life safety need for an IFSS. Note that in this instance unoccupied means entirely unoccupied (i.e., if security staff are still present then the building is occupied).
- The building has a level of fire safety management in place. This includes things such as ensuring escape routes are kept clear, that fire safety features and systems within the existing building are in operational condition, and that generally acceptable levels of fire risk reduction are implemented. Further guidance can be found in AS 1851 as to a standard of fire safety management that would generally be expected to be provided.
- Where the building has an existing combustible external wall, it is recommended that guidance is sought from a fire safety engineer as defined under the relevant legislation for the state and in the absence of a definition, a chartered fire safety engineer with Engineers Australia or equivalent. This potentially brings a significant fire life safety risk and it is recommended that specialist guidance is sought.

Table 4: Interim measure in relation to fire protection technical guidance

Item	Key principle of fire safety	Intent	Guidance
Means of detecting a fire	An appropriate means of detecting a fire shall be provided.	In the event of a fire, it is important that the fire is identified so that necessary actions can be undertaken to protect life safety of occupants.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • Where isolation of detection is required to facilitate construction work, this may consider the extent, duration, and type of work to be undertaken as well as the nature/occupancy of the area to be isolated. The following could be considered: <ul style="list-style-type: none"> ○ Providing temporary alternative protection (i.e., temporary heat detection or if building is sprinklered use of the sprinkler system as a means of detection) ○ Undertake isolation during whilst the area/building is not occupied (i.e., out of hours) ○ Provide a manual means of detection during isolation (i.e., a fire watch) ○ Remove all combustible items to remove the risk of fire (noting this is unlikely to be feasible except in exceptional circumstances) ○ Un-occupy parts of the building where the means of detection shall be isolated • Where isolation of detection is undertaken this may consider the impact on fire safety systems that are connected to the detection system and whether these can still operate as required (for example: doors, shutters, curtains, dampers, smoke exhaust systems, alarm, alarm receiving centres).
Means of warning	An appropriate means of alerting occupants to a fire shall be provided.	In the event that a fire is detected, it is important that this is communicated such that necessary actions can be undertaken to protect life safety of occupants.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • Where isolation of warning is required to facilitate construction work, consideration of the extent, duration, and type of work to be undertaken as well as the nature/occupancy of the areas to be isolated. The following could be considered:

Item	Key principle of fire safety	Intent	Guidance
			<ul style="list-style-type: none"> ○ Providing temporary alternative protection (i.e., temporary automatic warning system) ○ Undertake isolation during whilst the area/building is not occupied (i.e., out of hours) ○ Provide a manual means of warning (i.e., fire watch) ○ Utilise alternative means of warning (i.e., visual alarms, communication procedures) ○ Un-occupy parts of the building where the means of warning shall be isolated, ● Clear procedures being agreed on for communication between construction site fire warden/responsible person(s) and the building fire warden/responsible person(s).
Means of egress	An appropriate means of egress shall be provided so that occupants are afforded the opportunity to evacuate.	In the event that a fire warning is received, it is important that suitable routes are available so that occupants can escape from the building safely.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> ● Where the construction work requires to impact on the existing means of escape route the following could be considered: <ul style="list-style-type: none"> ○ Provide at least two exits from an occupied space (unless existing arrangement only comprises a single exit, however this needs to be reviewed given the likely increased hazard as a result of the construction work) ○ Where evacuation routes are impacted by the construction work, a revaluation of the means of egress arrangement may be undertaken considering the number of occupants, travel distance, availability of egress and available egress width, exit signage, and emergency lighting at a minimum ○ Providing egress through the construction site. Where egress through the construction site is considered, the means of egress arrangement should be reviewed considering the number of occupants, egress width, surface suitability, emergency lighting

Item	Key principle of fire safety	Intent	Guidance
			<p>provision, exit signage, and ability to maintain the escape route as available which may require fire and/or smoke resisting construction.</p> <ul style="list-style-type: none"> • Egress away from the building given potential external construction areas/compounds.
Means of first aid fire-fighting	There shall be appropriate means of fire aid fire-fighting	In the event that a fire is identified, the provision of measures to enable potential extinguishment or to assist in facilitating egress may be beneficial.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • Where existing coverage is impacted by construction work the following could be considered: <ul style="list-style-type: none"> ○ Seek to only impact on a single hose reel at a time and maintain the appropriate water supplies and evaluate shortfall in coverage and impact. ○ Provide extinguisher coverage in lieu of hose reel to address potential shortfalls in hose reel coverage. This should consider the appropriate type and size of extinguisher to be used ○ Provide extinguishers in alternative locations where existing extinguishers are provided
Means of restricting fire spread/structural protection	There shall be appropriate means of structural fire protection and measures to restrict the spread of fire and/or smoke	In the event of a fire, the control of fire spread and growth may be important with respect to life safety of occupants and also fire fighters. Consideration therefore must be given to the structural fire resistance and the compartmentation arrangements in the interim fire safety strategy.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • If structural protection is to be compromised by the construction work, then alternative structural arrangements (for example considering temporary structural fire protected support members) may be provided to maintain the structural fire arrangements. • If the building is of timber construction, then a hazard type assessment may be required to evaluate the construction site potential impact on the structural performance. • The existing compartmentation/fire resisting construction arrangements in the building could be maintained including protection to fire-isolated stairs and other shafts, fire-isolated passageways/corridors, internal fire compartmentation, and smoke compartmentation, as well as protection

Item	Key principle of fire safety	Intent	Guidance
			<p>of openings externally and external fire rated wall construction.</p> <ul style="list-style-type: none"> • The occupied area may be fire separated from the construction areas (either permanent or temporary separation). • All penetrations (such as doors, services, other openings) being appropriately sealed to maintain the FRL of the separation. • Where compartmentation is required to be compromised to facilitate construction work, the following could be considered: <ul style="list-style-type: none"> ○ Installation of additional temporary compartmentation of equivalent fire resistance to continue to maintain the fire separation ○ Evaluation of the impact of compromising the compartmentation considering compartment size, classification, occupancy numbers/types, availability and suitability of means of egress, as fire detection and alarm zoning (including systems which operate from the detection system), sprinkler zoning, smoke hazard management systems, fire hose reels, and hydrant coverage • The existing internal linings being maintained. Where additional linings are introduced that may impact on the existing construction this may consider the flammability and contribution to fire spread with respect to their location. • Increase focus on interim measure in relation to fire prevention to reduce the risk of a fire occurring. • Any construction work being undertaken where the existing building has combustible elements in the external wall is strongly recommended to involve a fire safety engineer given the potential risk involved in this arrangement.

Item	Key principle of fire safety	Intent	Guidance
Means of suppression	There shall be appropriate means of suppression	In the event of a fire, suppression may be a significant item in the existing baseline fire safety strategy. Consideration therefore must be given to the impact of any work on the suppression system.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • Where isolation of suppression systems is required to facilitate construction work this may consider the extent, duration, and type of work to be undertaken as well as the nature/occupancy of the areas to be isolated. The following could be considered: <ul style="list-style-type: none"> ○ Providing additional isolation valves (and ensuring design of system still works) to enable the sprinkler system to be isolated for the area of work and operational in remaining occupied areas ○ Providing temporary alternative protection (i.e., it may be possible to provide a temporary sprinkler line in certain circumstances) ○ Undertake isolation whilst the area/building is not occupied (i.e., out of hours) ○ Provide a manual means of suppression (i.e., fire watch with extinguisher) ○ Increased focus on interim measure in relation to fire prevention to reduce the risk of a fire occurring ○ Un-occupy parts of the building where the means of suppression shall be isolated
Means of managing smoke hazard	There shall be appropriate means of smoke hazard management	In the event of a fire, smoke hazard management may be a significant item in the existing baseline fire safety strategy. Consideration therefore must be given to the impact of any work on the smoke hazard management system.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • Where isolation of smoke hazard management systems is required to facilitate construction work this should consider the extent, duration, and type of work to be undertaken as well as the nature/occupancy of the areas to be isolated. The following could be considered: <ul style="list-style-type: none"> ○ Provide a temporary alternative smoke exhaust arrangement (e.g., openable windows instead of exhaust fans) ○ Provide additional fire and/or smoke compartmentation

Item	Key principle of fire safety	Intent	Guidance
			<ul style="list-style-type: none"> ○ Provide additional detection and alarm provisions ○ Provide additional means of suppression ○ Undertake isolation whilst the area/building is not occupied (i.e., out of hours) ○ Potentially reduce the number of occupants within the space (if egress is queue restricted or an exit is considered unavailable) ○ Increased focus on interim measure in relation to fire prevention to reduce the risk of a fire occurring
Means of fire brigade access and intervention	There shall be suitable facilities to enable fire fighter access and intervention	In the event of a fire, the fire brigade has duties with respect to fire-fighting and rescue. Consideration therefore must be given to providing suitable facilities to enable their operational requirements.	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> ● It may be feasible to maintain the existing coverage however access to the hydrant may be within the construction site. Consideration should be given to access routes to hydrants with potentially additional signage and updates to block plans. ● Where isolation of the hydrant system is required to facilitate construction work, this should consider the extent, duration, and type of work to be undertaken as well as the nature/occupancy of the areas to be isolated. The following could be considered: <ul style="list-style-type: none"> ○ Installation of a temporary hydrant to maintain coverage ○ Installation of additional signage to direct fire fighters towards live hydrants and away from isolated hydrants ○ Updates to block plans to show live hydrants and coverage ○ A member of the occupied building's fire safety response team or similar could meet the fire brigade on arrival. This person could be briefed on the isolation status and provide relevant information to the fire service to assist in facilitating the fire fighting response ● If work is required to the fire control room, an alternative fire control

Item	Key principle of fire safety	Intent	Guidance
			<p>room should be provided. This will require to be reviewed on a case by case basis as this arrangement is to be avoided.</p> <ul style="list-style-type: none"> • If fire brigade access is impacted by the construction work then alternative access arrangements could be provided and this should ultimately consider the fire-fighting strategy for the building so that appropriate hydrant access, set up areas, and protection to fire fighters is provided. <p>In summary responding firefighters should be able to readily identify and access essential firefighting services (see following list) and an interim strategy should consider this:</p> <ul style="list-style-type: none"> • Fire control centre / room • Fire alarm panel / sub-indicator panel(s) • Sprinkler and hydrant booster assemblies • Sprinkler control valve room • Hydrant locations • Booster assemblies
<p>Fire safety management/actions in the event of a fire</p>	<p>There shall be a fire safety management plan to identify the required fire safety measures and the procedures to be implemented.</p>	<p>In the event of a fire, fire safety management will likely play a significant role in for example evacuation. Consideration therefore must be given to the interim fire safety strategy interaction and reliance on fire safety management requirements,</p>	<p>To maintain the key principle of fire safety the following could be considered:</p> <ul style="list-style-type: none"> • The fire safety management plan for the occupied building should be updated to incorporate the IFSS requirements. This should be reviewed on an on-going basis and updated when change occurs to the IFSS. • The roles and responsibilities for the IFSS should be clearly documented within the fire safety management plan • The existing building inspection and maintenance procedure should be maintained as appropriate with the construction work being undertaken.