



MELBOURNE AIRPORT

MELBOURNE AIRPORT - FIRE SAFETY GUIDELINE

FSG02

FIRE PRECAUTIONS DURING CONSTRUCTION

1.0 Introduction

During the construction period, it is inevitable that fire safety systems will be impaired or isolated. The construction process may also introduce additional fire safety risks which do not exist in the normal day to day operations of the airport, for example, hot works.

Accordingly there is a need to identify and address the fire safety risks associated with the construction period so as to maintain an acceptable level of fire safety for all airport users. This is typically undertaken by the Fire Safety Engineer for the project via a risk assessment process in consultation with the Authorities Having Jurisdiction and relevant stakeholders to determine appropriate risk mitigation measures. The risk assessment and requirements are documented in a Construction Fire Safety Plan (CFSP) specific to the project works – this will typically be required for large projects, projects with staged handovers, or where the project works impair existing fire safety provisions.

Precautions during construction are identified in the Building Regulations 2006 and are subject to approval of the Authorities Having Jurisdiction. At Melbourne Airport, this is the Airport Building Controller.

This guideline comprises two parts as described below:

- Part A has been prepared as a general guide targeted at APAM project managers to advise the likely fire risk mitigation measures required during the construction period;
- Part B contains the detailed requirements for preparing the CFSP, fire risk assessments and hoarding reviews.

PART A

A.1 General / Typical Requirements for all projects

The following items are general / typical requirements for all construction works at Melbourne Airport which require consideration via the design team and project managers; note that a specific fire risk assessment is required for any significant construction works at Melbourne Airport and that additional measures may be necessary:

- A Construction Fire Safety Plan (CFSP) will be required for large projects, projects with staged handovers, or where the project works impair existing fire safety provisions (e.g. significant system isolation periods, dual isolations, exit route / stair isolations, impact to fire-fighting operations). The requirement for this will be noted on the BAC and/or PERCOW and can be discussed prior with the Melbourne Airport Fire & Life Safety Manager.
- Fire protection systems – implementation needs to be considered in any staging plans, refer also to notes below on completion / hand over.
- System Isolations:
 - In publicly accessible areas, all fire protection systems shall remain operational with any exceptions dealt with via fire risk assessment in the CFSP;
 - If isolations are required – at least the sprinkler system or detection system must stay operational, and if sprinklers are isolated then hydrants & hose reels must be operational to facilitate manual fire-fighting operations;
 - Any further isolations outside of guidelines require fire risk assessment for inclusion in CFSP following stakeholder consultation if acceptable; this is required to be referenced in isolation permit applications and may include additional precautions depending on the situation (e.g. fire watch personnel);
 - Isolation procedures are detailed in FSG05 - Fire Protection Impairment Procedures which is managed by the Melbourne Airport Fire & Life Safety Manager.
- Hoarding reviews are required prior to implementation on site in accordance with FSG02.
- As areas are completed & handed over (particularly staged handovers), these areas are required to have compliant and operational sprinklers, smoke detection, EWIS, and fire-fighting provisions. Other fire safety provisions may be considered case-by-case for the project but will require fire risk assessment if not completed at handover – if relevant this should be in place well ahead of time to minimise potential delays to handover.
- Fire witness testing is required at each handover (note embargo dates).
- Melbourne Airport evacuation diagrams are to be revised and posted for each hoarding change and at final handover as required; these diagrams are produced by the project Fire Safety Engineer and the process for these is contained in FSG17 - Evacuation Diagram Updates. These should be prepared at least 1 week prior to handover date for review by the Melbourne Airport Fire Safety Adviser prior to posting.
- Where post construction sign-off is necessary for the project, allow at least 10 business days from completion of all defects to enable reports / certificates to be prepared and lodged / approved by the authorities.

- Other fire safety guidelines of relevance are noted below
 - Fire Safety System Isolations / Impairments - shall be undertaken in accordance with FSG05 - Fire Protection Impairment Procedures.
 - Site Sheds / Accommodation - siting shall be in accordance with FSG13 – Portable / Temporary Structures on Apron Level.

A.2 Revision of Evacuation Diagrams (example)

The existing Melbourne Airport evacuation diagrams may need revision due to construction works to show hoarded areas and revised evacuation routes – an example is indicated below, refer red hatched area under construction.

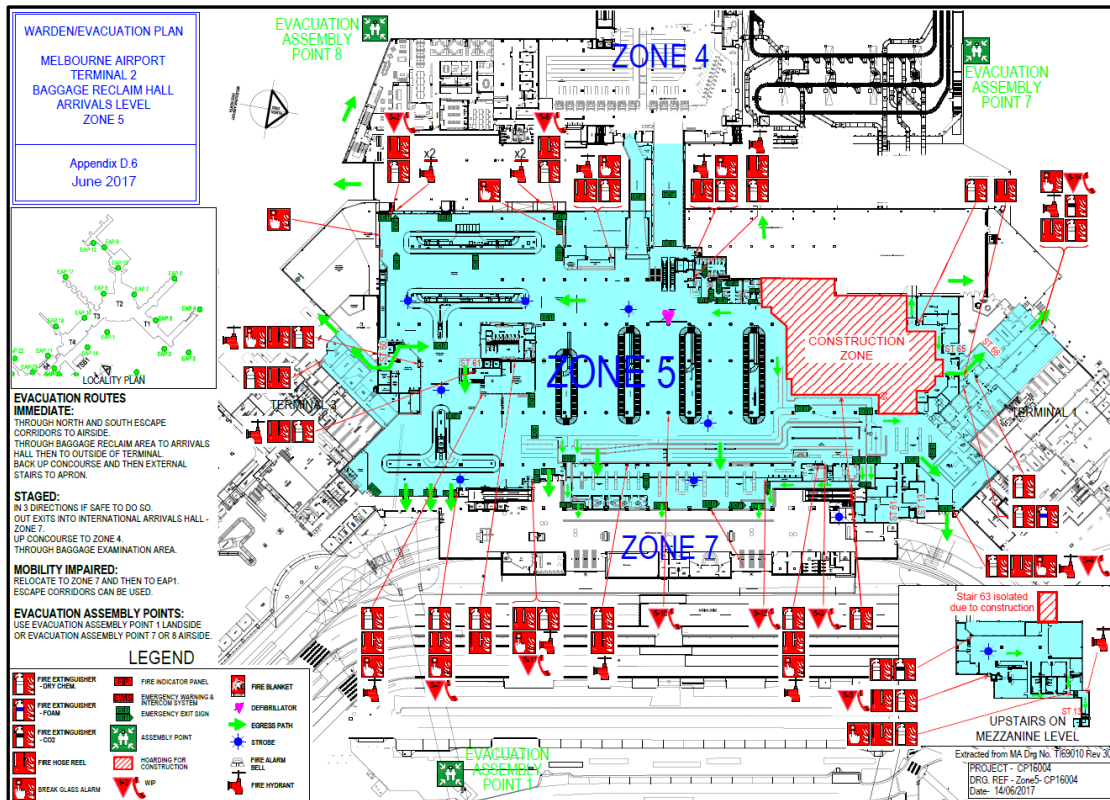


Figure 1 – evacuation diagram during construction (example)

PART B

B.1 Introduction

This document sets out detailed guidance for the fire precautions to be adopted for construction projects at Melbourne Airport; this serves as general conditions as specific fire hazards will need to be assessed on a project by project basis as determined by the fire safety engineer in conjunction with stakeholders.

Development and implementation of a Construction Fire Safety Plan (CFSP) is typically necessary to address the fire risks during construction. This will incorporate specific fire risk assessments for the work area and activities to identify potential fire hazards and precautions necessary during the construction phase of the project.

This document also sets out a process to define the necessary fire safety requirements applicable to projects which are planned to have a staged construction program, partial occupancy or other proposal which limits or prevents full compliance with the Melbourne Airport Fire Safety Strategy prior to occupancy or public access.

It may also apply where individual areas or sections of a project are completed within a larger construction site or area.

B.2 References

The following documents are also relevant to this Guideline:

- Melbourne Airport Precinct Fire Safety Strategy;
- Melbourne Airport Technical Standard MAS-FPR-001 – Fire Protection, Public Address / EWIS and Hearing Loops;
- Relevant Australian Standards.

Note also that 'fire precautions during construction' is nominated in the Victoria Building Regulations and is subject to the approval of the Airport Building Controller.

B.3 Basis of Assessment

The work areas forming part of the project are to be nominally defined to enable the following to be assessed in the CFSP:

- the potential isolation of fire protection systems (includes consideration of where the main reticulation runs and potential disruption by this or other adjacent project works);
- the capability for fire protection system isolation within the work area and beyond the work area;
- hoarding locations in relation to fire protection systems (e.g. where these obstruct equipment);
- exits or paths of travel that may be temporarily impeded and alternatives that must be provided (will typically require fire risk assessment by the project fire safety engineer);
- any wayfinding difficulties occurring as a result of the works (e.g. managed with additional signage and/or hoarding alterations).

B.4 General Fire Precautions

The following precautions shall be incorporated within the scope of works and included in the CFSP requirements:

- fire safety systems shall be kept live as far as possible in occupied areas, particularly in public areas, including temporary wiring and fire mains where necessary.
- fire safety system Isolations:
 - in publicly accessible areas, all fire protection systems shall remain live operational as far as practicable with any exceptions dealt with via fire risk assessment in the CFSP;
 - within demolition areas it is expected that smoke detection system will be isolated to avoid spurious alarms;
 - at least the sprinkler system or detection system must stay live in all areas, and if sprinklers are isolated then hydrants & hose reels must be live to facilitate manual fire-fighting operations;
 - any further isolation outside of the above guidelines (e.g. dual impairment of smoke detection and sprinklers) requires fire risk assessment including stakeholder consultation; if acceptable the fire risk assessment shall be included in the CFSP; this is required to be referenced in isolation permit applications and may include additional precautions depending on the situation (e.g. fire watch personnel);
 - isolation procedures are detailed in FSG05 - Fire Protection Impairment Procedures which is managed by the Melbourne Airport Fire & Life Safety Manager.
- where sprinklers are to be isolated for a construction zone, subsidiary valves shall be used;
- where removal of suspended ceilings forms part of the demolition scope, existing concealed space sprinkler protection shall remain operational as a minimum;
- hot works permits and precautions shall be strictly adhered to;
- manual fire suppression equipment for use in a fire emergency shall be provided within work areas, for example fire hose reels and portable extinguishers;
- contractors shall be familiar with the Melbourne Airport emergency procedures and evacuation diagrams for the specific areas worked;
- hoardings shall be designed to enable a minimum of two (2) exit points from within, with posted signs at each hoarding exit identifying the nearest building exit point (any exceptions to be addressed in the CFSP);
- hoardings shall be positioned between existing ceiling sprinkler rows such that a row of sprinklers protects each side of the hoarding wall;
- signage shall be placed on the hoardings as noted below.

B.5 Review of Hoarding Implementation

Where hoardings are to be implemented they must be reviewed against the following parameters and outcomes included in the hoarding reviews contained within the CFSP.

Aspect	Comment
Hoarding material	Compliance with Melbourne Airport guideline / standard for hoarding materials is required (FSG01)
Evacuation diagrams	These may require update during construction stages to reflect construction works as required (e.g. public areas indicated with construction zones highlighted, impaired or obstructed fire safety provisions / exits to be removed temporarily). Refer to FSG17 for details on requirements for update of evacuation diagrams.
Egress provisions	A minimum number of egress routes will be necessary from occupied areas; this needs to be reviewed case-by-case based on hoarding layouts and subject to fire risk assessment.
Fire-fighting equipment	Retention of sufficient manual fire-fighting equipment to serve occupied areas will be required. This will require review case-by-case based on hoarding layouts and equipment location. Review will be in conjunction with ARFF for fire hydrant provisions as required.
WIP & blue strobe	Warden Intercom Phones (WIPs) and blue strobe locations will require review in conjunction with APAM Fire and Emergency Evacuation personnel; typically WIPs and blue strobes will require relocation to public areas if obstructed by hoardings.
Emergency lights & exit signage	These will be reviewed case-by-case based on hoarding layouts and equipment location, may require additional signs / lights and blanking of signs which direct occupants to exits which are unavailable.

Signage on Hoardings

The following signage shall be provided on the hoarding entry door (public side) in addition to any other required OH&S signage:

- WORKS AREA – NO PUBLIC ACCESS
AUTHORISED PERSONS ONLY
(green on white background, at least 50mm 'UPPER CASE' lettering)

The following shall be provided on the hoarding exit door (construction side) in addition to any other required OH&S signage:

- EXIT DOOR, KEEP CLEAR
(green on white background, at least 50mm 'UPPER CASE' lettering)
- A procedure to ensure the following has been checked prior to locking the hoarding entrance door; i.e. check and sign sheet or similar:
 - check that all contractors / occupants have vacated the hoarded area;
 - check that all equipment has been de-energised and isolated;
 - check that any no other fire hazard or potential ignition source is left unattended.

B.6 Staged Construction

Construction works with staged handover conditions, due to either progressive occupation of an area which is sought by the client or for contractual or practical reasons, presents challenges for fire safety approval. The staging may incorporate base build or shell and core handover, fitout handover, stock handover, or public access conditions. In such circumstances, installed fire safety systems are often partially installed or incomplete, may be inaccessible in an emergency or not able to be fully utilised, may be compromised in performance, or subject to numerous impairments and ongoing works. Final commissioning and testing may be difficult when complete due to operational areas, as-built documentation may be incomplete or cannot be substantiated, and rectification of defects disruptive.

To address these issues and present an alternative to conventional approval difficulties and handover delays, a formal process is proposed and defined below.

Process

It is considered that with stakeholder support, the CFSP fire risk assessment process can be utilized to assess projects involving staged handover conditions as follows:

- The construction / handover stages are identified at the commencement of the works – ideally this is also considered during the design phases of the project noting that precise staging sequences may not be known prior to appointment of a builder;
- Input is obtained from the design team including project manager, builder, contractors, fire safety engineer, etc. to discuss the practical aspects of the staging program and impact to fire systems, including the levels of completion or performance which may be achievable at each stage;
- The level of compliance necessary to achieve a reasonable level of safety for each stage is determined through a risk assessment process by the project fire safety engineer. Additional precautions can be defined during this assessment as necessary to establish the necessary level of safety;
- Feedback / discussions with the design team is undertaken to finalise any differences / omissions;
- Liaison with the ABC, PERCOW Process Leader, ARFF and APAM Fire & Life Safety Manager is undertaken to confirm that the proposed fire safety conditions for permit stages are satisfactory;
- Conditions for each stage are clearly defined and specified in the CFSP and distributed to stakeholders for approval / acceptance;
- Conditions form part of staged approvals by ABC and PERCOW Process Leader, to be enforced at each designated construction stage.

The following nominal requirements are considered as a base case; all requirements are subject to the outcomes of fire risk assessment:

- As areas are completed & handed over (particularly staged handovers), these areas are required to have compliant and operational sprinklers, smoke detection, EWIS, and fire-fighting provisions. Other fire safety provisions may be considered case-by-case for the project but will require fire risk assessment if not completed at handover – this shall be in place well ahead of handover dates to minimise potential delays to handover.
- Fire witness testing is required at each handover.

- Melbourne Airport evacuation diagrams are to be revised and posted for each hoarding change and at final handover as required; these diagrams are produced by the project Fire Safety Engineer and the process for these is contained in FSG17 - Evacuation Diagram Updates. These should be prepared at least 1 week prior to handover date for review by the Melbourne Airport Fire & Life Safety Manager prior to posting.

Any queries should be referred to the relevant APAM Project Manager, who will consult the Melbourne Airport Fire & Life Safety Manager.