



What you need to know about

# Smoke alarms for residential buildings



Smoke alarms are intended to detect smoke before it reaches the sleeping occupants of a building.

## Are smoke alarms compulsory?

Smoke alarms are compulsory and must be installed in residential buildings on or near the ceiling of every storey.

## What type of smoke alarm should be used?

Smoke alarms must meet the Australian Standard AS 3786-1993 required by the *Building Regulations 1994* (the Regulations).

In all new residential buildings, constructed on or after 1 August 1997, the smoke alarms must be connected directly to the consumer power mains as well as having a battery back-up.

Residential buildings constructed before 1 August 1997, can be fitted with a battery-powered smoke alarm.

## What residential buildings require smoke alarms?

The Regulations require self-contained smoke alarms to be installed in all residential buildings including dwellings within buildings of other non-residential use.

The following building Classes as broadly defined in the *Building Code of Australia 1996* (the BCA) are included:

- **Class 1a:** Detached houses, row houses, town houses, terrace houses or villa units
- **Class 1b:** Some boarding houses, guest houses or hostels
- **Class 2:** Buildings containing sole-occupancy units (e.g. apartments, blocks of flats)
- **Class 3:** Backpacker accommodation, residential parts of hotels or motels, residential parts of schools, accommodation for the aged, disabled or children
- **Class 4:** Dwellings in non-residential buildings (e.g. houses attached to shops).

You should familiarise yourself with the Class of building in which you intend installing your smoke alarm, as this will affect its required location.

If you are renting a dwelling or unit, it is the owner's (landlord's) responsibility to ensure smoke alarms are installed and kept in working condition. However, a tenant can take action to ensure compliance with the Regulations.

## Where should smoke alarms be located?

Smoke alarms are intended to detect smoke before it reaches the sleeping occupants of a building. Therefore, the alarm should be located in a position designed to wake the occupants and give them time to evacuate the building.

### Class 1 buildings

- **Class 1a:** *Detached houses, row houses, town houses, terrace houses or villa units*
- **Class 1b:** *Some boarding houses, guest houses or hostels*

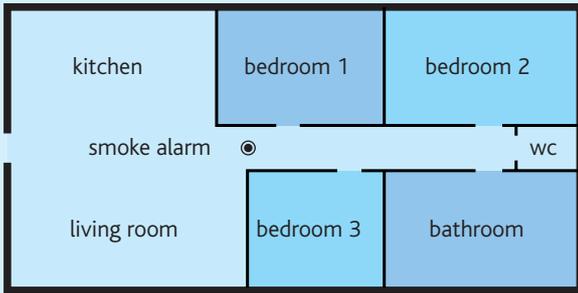
To protect any area used for sleeping in Class 1 buildings, the smoke alarm must be located "between each area containing bedrooms and the remainder of the dwelling". In some dwellings the bedrooms are located in a common area and connected by a hallway. In this instance, the alarm must be located as shown in Diagram 1.

If the bedrooms are not grouped in a common area or there is no connecting hallway, then an alarm must be located within 1.5 metres of the entrance to each bedroom as shown in Diagram 2.

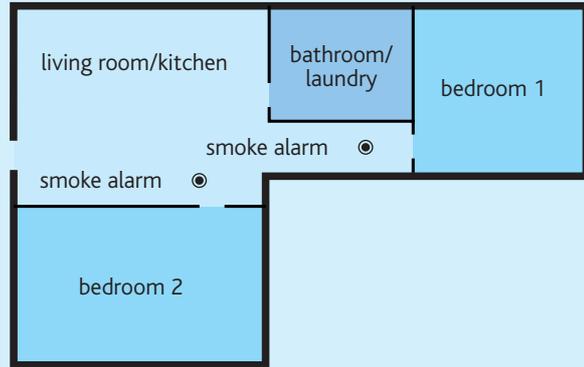
An additional smoke alarm is required in any other storey that is not already provided with a smoke alarm. The location for this alarm must be in the path that people will most likely take to evacuate the building. This will ensure an alarm will be raised before the smoke makes the common exit impassable.

If the other storey is not connected to the remainder of the building, then the alarm must be centrally located in the lower area. In all cases, smoke alarms must be audible throughout all storeys. One way of achieving this is to interconnect the alarms so they will sound when the alarm within the sleeping area is activated.

**Diagram 1** Smoke alarms in hallways



**Diagram 2** Residential building with separate sleeping areas



### Class 2 buildings

- Class 2: *Buildings containing sole-occupancy units (e.g. apartments, blocks of flats)*
- To protect any area used for sleeping in Class 2 buildings, the smoke alarm must be located as per Diagram 1 and Diagram 2. In other areas (public corridors, lobbies etc.) smoke alarms must be installed not more than 5 metres from any wall and not more than 10 metres between alarms. These alarms must be audible to sleeping residents within the sole-occupancy units.
- If there are other storeys not connected to the remainder of the building or any part of a public corridor, then an alarm must be centrally located in the lower storey area. In all cases, the alarm must be audible throughout all storeys.
- It is advisable to interconnect the alarms so that the alarms within the sleeping areas of the sole-occupancy units are activated at the same time.

### Class 3 buildings

- Class 3: *Backpacker accommodation, residential parts of hotels or motels, residential parts of schools, accommodation for the aged, disabled or children*
- To protect any area used for sleeping in Class 3 buildings, the smoke alarm must be located as per Diagram 1 and Diagram 2. In addition to providing smoke alarms to sole-occupancy units, a smoke alarm must be installed in all other habitable rooms except for kitchen areas that may install suitable self-contained heat (thermal) alarms. As before, the alarms must be audible in the sleeping areas of the sole-occupancy units.

### Class 4 parts of buildings

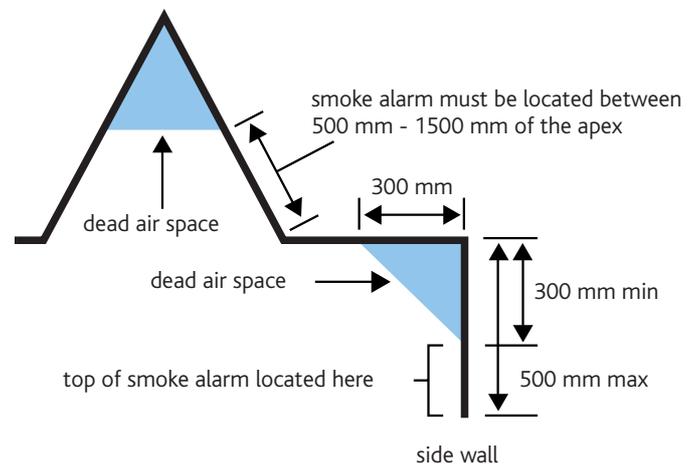
- Class 4: *Dwellings in non-residential buildings (e.g. houses attached to shops)*
- To protect any area used for sleeping in Class 4 parts of buildings, the smoke alarm must comply with the provisions for Class 1 dwellings. In addition, they must have smoke alarms within any non-fire-isolated exits and any public corridor areas serving the Class 4 part of the building unless the building is sprinkler protected.

## Where should smoke alarms be fitted?

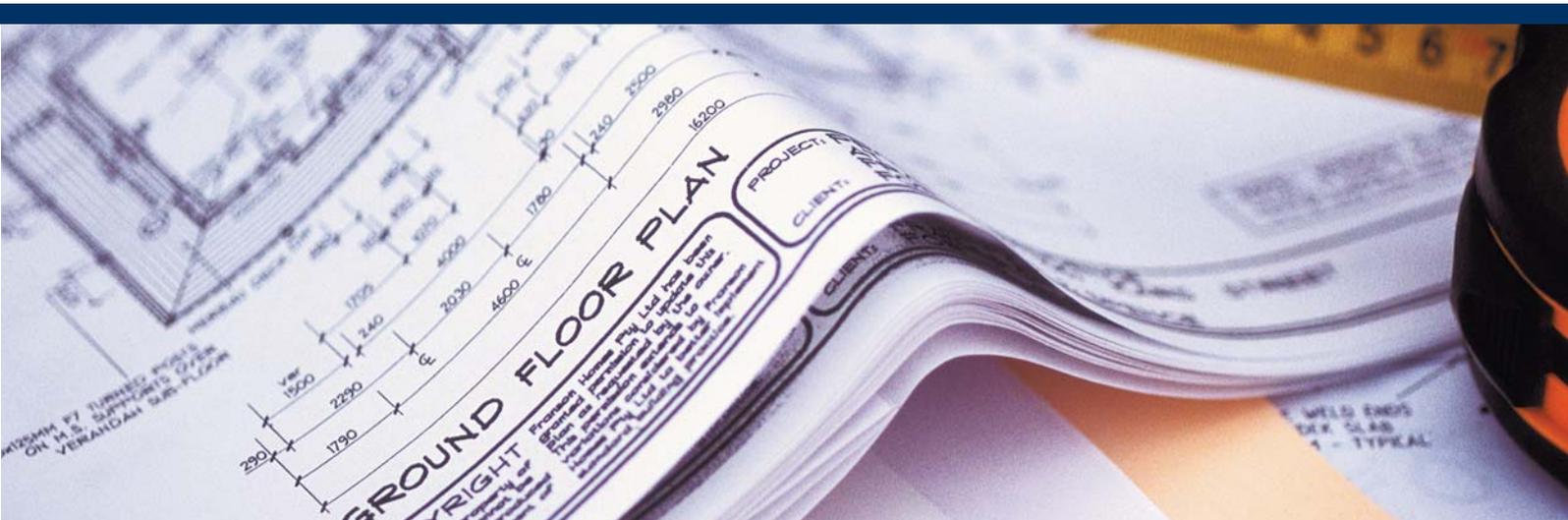
Smoke alarms must be installed on or near the ceiling with care taken to avoid dead air spaces.

A dead air space is an area in which trapped air may prevent smoke from reaching the alarm. This space generally occurs at the apex of cathedral ceilings, the corner junction of walls and ceilings and between exposed floor joists. If it is impractical to mount the smoke alarm on the ceiling, it may be located on the wall. The top of the smoke alarm must be between 300 mm and 500 mm below the ceiling (see Diagram 3).

**Diagram 3** Dead air space and proper mounting of smoke alarms on side walls.



The distance from the apex of a cathedral ceiling to the top of the alarm must be between 500 mm and 1500 mm.



## What are the maintenance requirements for smoke alarms?

For smoke alarms to be effective, it is important that they are maintained. The operation of most smoke alarms can be checked by depressing a button on the outside of the alarm. The test should be conducted in accordance with the manufacturer's instructions.

The battery in most smoke alarms will need to be replaced on an annual basis (lithium ion batteries last up to 10 years). Smoke alarms will emit a warning sound when the battery needs to be replaced (a high pitched single beep every 30 seconds).

The alarm should be cleaned regularly to remove dust particles that may affect the operation of the unit.

Maintenance guidance is provided in the manufacturer's installation and operation details.

## Who can install smoke alarms?

As smoke alarms (in new building work) are "hard wired" to an electricity supply, a qualified electrician must be used for installation. Battery operated smoke alarms can be installed by anyone. If you need assistance, contact a service organisation or local council for advice.

**It is advisable to interconnect the alarms so that the alarms within the sleeping areas of the sole-occupancy units are activated at the same time.**

## How are false alarms minimised?

Smoke alarms are sensitive and may detect smoke and moisture created by common household activities. To reduce the likelihood of false alarms, do not locate smoke alarms near cooking appliances and bathrooms.

If false alarms persist, then the smoke alarm should be moved to a more suitable location or a different type of smoke alarm installed.

## Should smoke alarms be interconnected?

As it is inexpensive to interconnect alarms, it is advisable that smoke alarms be interconnected. However, there is no requirement for interconnection.

## Are there penalties for non-compliance?

A fine of up to \$500 could be imposed on an owner who fails to comply with the smoke alarm requirements of the Regulations.

## Need more information?

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