

## Essential Safety Measures 09 | Residential Smoke Alarm, Detection and Evacuation System Requirements

### Audience

The audience for this Practice Note includes:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Architects / Designers            | <input checked="" type="checkbox"/> Owner Builders                             |
| <input checked="" type="checkbox"/> Builders                          | <input type="checkbox"/> Plumbers  |
| <input checked="" type="checkbox"/> Building Surveyors / Inspectors   | <input checked="" type="checkbox"/> Real Estate Management Agents              |
| <input type="checkbox"/> Engineers                                    | <input checked="" type="checkbox"/> Trades and Maintenance (inc. Electricians) |
| <input checked="" type="checkbox"/> Home Owners / Residential Tenants | <input type="checkbox"/> Other   |

### Purpose

This Practice Note provides guidance on the NCC 2022 (1 May 2023 commencement date) compliance changes and legislative requirements that relate to the installation of smoke alarm, evacuation lighting and detection systems in residential buildings.

The content within this Practice Note provides clarity on the:

- Legislative requirements
- Location of smoke alarms, smoke detection systems and evacuation lighting
- Building Permit requirements
- Residential Tenancies Regulations 2021



For further guidance on the requirements of automatic fire suppression systems in Class 3 and Class 9a residential buildings contained in Building Regulations 146 and 147, refer to— Practice Note ESM 01 Fire Safety Systems – Residential Care and Shared Accommodation Buildings.

### Abbreviations & Definitions

The abbreviations and definitions set out below are for guidance only. They are not intended to vary those set out in the Building Act 1993 or the Building Regulations 2018 or the NCC.

- **Act** –Building Act 1993
- **AS** – Australian Standard
- **BIR** – Building Interim Regulations 2017
- **NCC** – National Construction Code 2022 (commencement date 1<sup>st</sup> May 2023)
- **Regulations** –Building Regulations 2018



## Legislative Requirements

Residential buildings that complied with the requirements of regulations 707 or 709 of the BIR immediately before those regulations were revoked on 2 June 2018, need not comply with the current Building Regulations' regulation 145 (Automatic smoke detection and alarm systems). Regulation 145 does however apply to any residential building built before 1 August 1997 that did not comply with regulation 707 or 709 of the BIR as of 2 June 2018.

In addition, regulation 145(6) states that if a Class 1a or part of a Class 4 (class 4 being the only residential unit in a Class 5, 6, 7, 8 or 9 building), or a sole-occupancy unit contained in a Class 2 building complies with regulation 707 of the BIR immediately before the Regulations commenced on 2 June 2018, regulation 145 of the Regulations does not apply.

A key difference between the requirements in the BIR and regulation 145(2) of the Regulations, is that regulation 145(2) now requires mains powered smoke alarms whereas regulation 707 of the BIR allowed self-contained battery-operated smoke alarms to be installed.

This means that if battery operated, self-contained smoke alarms were installed in those particular building classes before 2 June 2018, the owner is not required to upgrade and change them to mains powered smoke alarms.

### Class 1 Buildings

In summary Class 1 buildings are required to have:

- a smoke alarm system that complies with NCC 2022 Volume Two Part 9.5; and
- be powered from the mains electricity supply if there is such a supply to the building; and
- be interconnected where there is more than one alarm: or
- a smoke alarm system (approved by a registered building surveyor).



For further guidance on self-contained smoke alarms refer to ESM-03 Self-contained Smoke Alarms for Existing Buildings and Practice Note 27 – Existing Residential Buildings – Self Contained Smoke Alarms. Practice Note 27 remains relevant as it is referred to in regulations 707 and 709 of the BIR.

For guidance on the classification of buildings refer to NCC Part A6 and VBA Building Practice Note GE 05 Determination of building classification.

### Class 2, 3, 4 buildings and Class 9a Residential Care buildings

Existing buildings built before 1 August 1997 that did not comply with the BIR and are Class 2, 3, or Class 4 parts of a building, or a Class 9a residential care building, must comply with the NCC 2022 Volume One Part E2 Smoke hazard management and the respective NCC Specifications as follows:

- a smoke alarm system that complies with Specification S20C3 or S20C4; or
- a smoke detection system that complies with Specification S20C4
- a combination of a smoke alarm system and a smoke detection system that complies with Specification S20C5; or
- A smoke alarm system that complies with S23C5 (where applicable).

The NCC Specifications contain several requirements which vary depending on the type of building and its use, therefore practitioners and owners will need to review these Specifications in detail when considering what is required for a building to which regulation 145(3) applies.



A residential care building is a place of residence where 10% or more of persons who reside there need physical assistance in conducting their daily activities and to evacuate the building during an emergency.

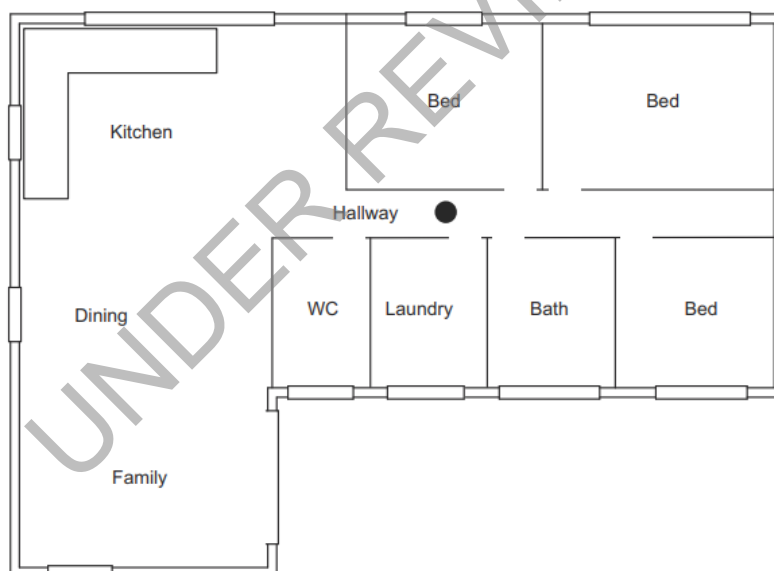
## Location of smoke alarms in Class 1 buildings

When deciding on the position of smoke alarms it is important to remember that they are intended to detect smoke before it reaches the occupants sleeping areas. The alarm is designed to wake the occupants and give them time to evacuate.

In the event an existing Class 1 building does not have a compliant smoke alarm or smoke detection system then compliance with NCC 2022 Volume two Part 9.5 must be complied with.

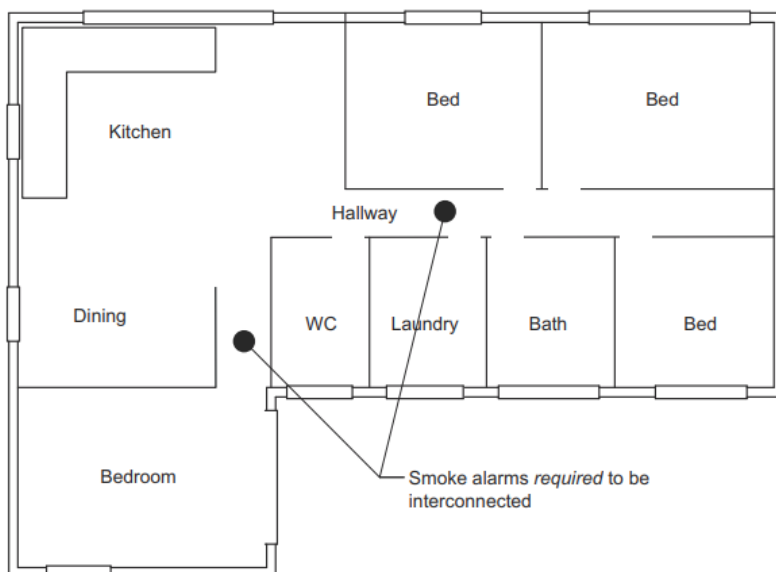
### Class 1a buildings

- NCC Clauses 9.5.2 and 9.5.4 (refer to figures 1 and 2) specify that smoke alarms, must be located in — any storey containing bedrooms, every corridor or hallway associated with a bedroom, or if there is no corridor or hallway, in an area between the bedrooms and the remainder of the building; and
- each other storey not containing bedrooms



**Figure 1** - Class 1a building, location of smoke alarm where all bedrooms are grouped together and served by a hallway is illustrated by the black dot.

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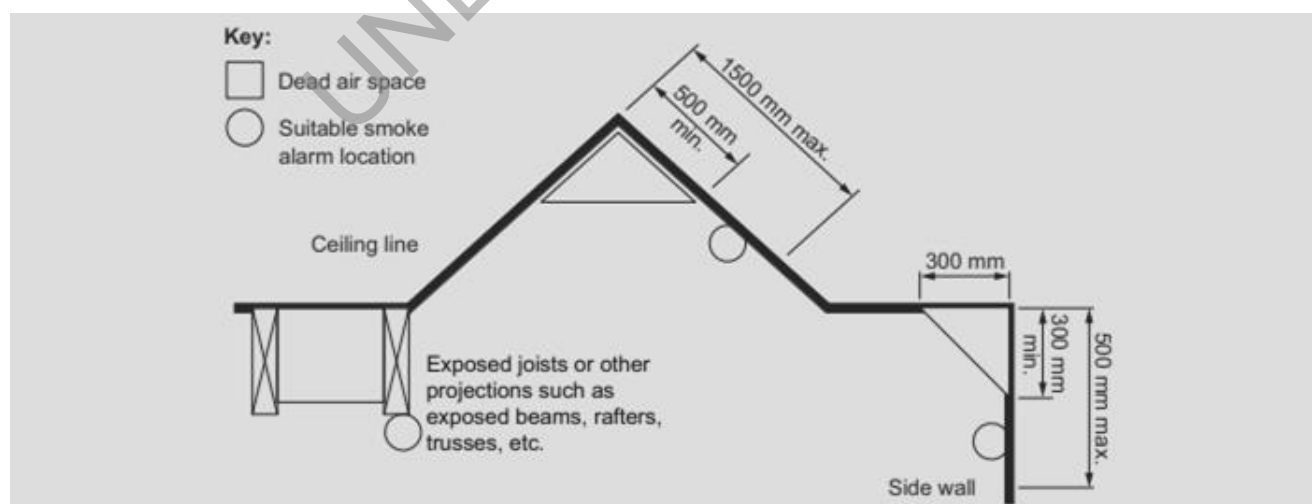
**Figure 2** - Class 1a building, location of smoke alarms, where bedrooms are in separate areas is illustrated by the black dots.

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In addition, NCC clause 9.5.4 (refer to Figure 3) outlines the requirement where smoke alarms located on the ceiling must be:

- at least 300 mm away from the corner junction of the wall and ceiling; and
- between 500 mm 1500 mm away from the high point and apexes of the ceiling, if the room has a sloping ceiling.

Where it is not possible, the smoke alarm may be installed on the wall, and located a minimum of 300 mm and a maximum of 500 mm off the ceiling at the junction with the wall.



**Figure 3** – Installation of smoke alarms to avoid dead air spaces

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A smoke alarm can give spurious alarms if the atmosphere contains particles which obscure vision, such as could occur in a Class 10a private garage part of a building. NCC Clause 9.5.1(b) therefore allows the use of a more suitable alarm, such as a heat alarm, in these locations.

Clause 9.5.1(d) requires alarms to be interconnected where there is more than one alarm. This only applies within a single dwelling. Therefore, alarms in a Class 1a dwelling need not be interconnected with alarms in another dwelling or a private garage which does not belong to the Class 1a dwelling.

### Class 1b buildings

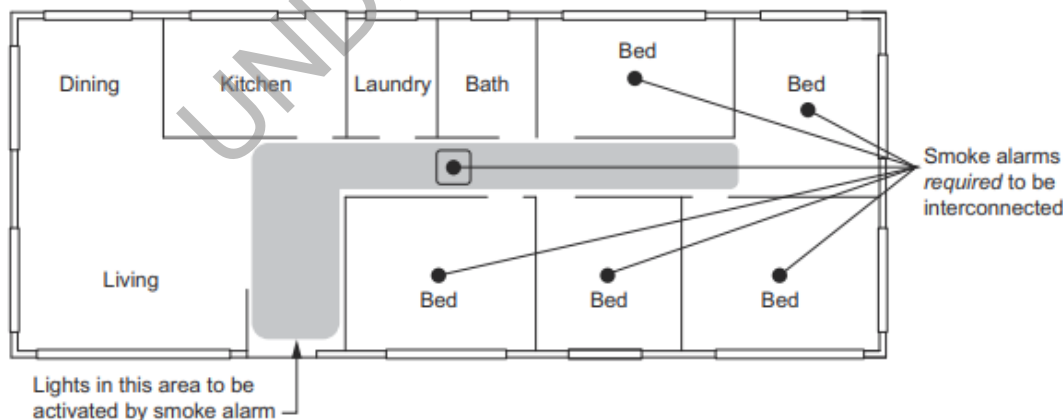
NCC 2022 Volume Two Part 9.5 also specifies different smoke alarm requirements for Class 1a and Class 1b buildings.

For a class 1b NCC 2022 Volume Two clause 9.5.3 (refer to figure 4) specifies that smoke alarms must be located in: —

- every bedroom; and
- every corridor or hallway associated with a bedroom, or if there is no corridor or hallway, in an area between the bedrooms and the remainder of the building; and each other storey, see extract from NCC Volume Two - Figure 9.5.3 illustrates requirements of this provision—



A Class 1b is one or more buildings which together constitute— (i) a boarding house, guest house, hostel or the like that— (A) would ordinarily accommodate not more than 12 people; and have a total area of all floors not more than 300 m<sup>2</sup> (B) (measured over the enclosing walls of the building or buildings); (ii) four or more single dwellings located on one allotment and used for short-term holiday accommodation.



**Figure 4** – Class 1b building, location of smoke alarms where multiple bedrooms are served by a hallway is illustrated by the black dots.

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### Lighting to assist evacuation

Due to its varied use, in addition to a Class 1b building having a greater number of smoke alarms, a system of lighting must also be installed to assist evacuation in accordance with Clause 9.5.5. This is due to Class 1b buildings generally being used for more transient purposes and the occupants being less familiar with the building layout.



This type of lighting system must be installed to assist evacuation of occupants in the event of a fire and be activated by the smoke alarm and consist of a light incorporated within the smoke alarm or the lighting located in the corridor, hallway or area served by the smoke alarm.

### Building permit requirements

A building permit is generally required for the installation of smoke alarm or detection system required by the Regulations and owners are encouraged to seek advice from a registered building surveyor prior to altering a smoke alarm or detection system.

Where a smoke alarm system is proposed to be installed in accordance with the relevant NCC requirements and manufacturers' product specifications, an exemption to the requirement to obtain a building permit for the installation of a smoke alarm or detection system may apply under the Regulations schedule 3, Item 4 - Alterations to a building in schedule 3 of the Regulations.

For further guidance on when a Building Permit is required, refer to Building Practice Note- Building Permits BP 01 - When is a Building Permit required.

### An approved smoke alarm system

An approved smoke alarm system is a system approved by the registered building surveyor. This means that an owner can apply for a building permit to install an alarm system in a building built before 1 August 1997 that does not comply with the NCC 2022 Volume Two, and the building surveyor can approve that system as part of an application for a building permit.

#### Example 1:

An existing dwelling may have a smoke alarm system that complies with regulation 707, however an extension is proposed with additional bedrooms which require additional coverage from the installation of new smoke alarms. In this instance the entire system would need to be interconnected under regulation 145. When considering the application, the Relevant Building Surveyor must consider fire safety matters when applying their discretion to allow any existing system to remain without it being altered or upgraded to comply.

The following situations must be considered when deciding an application for a building permit:

- A smoke alarm system complying with the NCC is not possible, for instance where no mains consumer power supply is available; or
- A complex smoke alarm system where a Performance Solution has been used.

### Residential Tenancies Regulations 2021

For tenants renting a house or residential unit, it is the owner's responsibility to ensure smoke alarms are installed and kept in working condition. Rental providers must have their smoke alarms checked to ensure they are still installed and in working order at least once every year. Smoke alarms must be checked frequently, to ensure they are working by pressing the test button until the alarm sounds. Replacement of a smoke alarm battery is required on an annual basis, or if the battery is lithium, the replacement may be required every ten years.

A fine can be imposed on an owner who fails to comply with the smoke alarm requirements of the Regulations and the requirements of the Residential Tenancies Regulations 2021 which came into effect on 29 March 2021. The new laws expand the rights and responsibilities of tenants and rental providers in which residential rental providers have certain responsibilities for building and related matters that include safety related checks that must be carried out.

For further guidance on the Residential Tenancies Regulations refer to the Consumer Affairs Website.



## Related Documentation

- AS 3786-2014 Smoke alarms using scattered light, transmitted light or ionization (incorporating amendment 1 and 2) Standards Australia
- AS 1670.1-2018 Fire detection, warning, control and intercom systems — System design, installation and commissioning — Fire (incorporating amendment 1) Standards Australia
- Building Act 1993
- Building Interim Regulations 2017
- Building Regulations 2018
- Consumer Affairs Victoria, Guide for rental providers – smoke alarms
- Building Practice Note BP 01- When is a Building Permit required
- Building Practice Note ESM 03 Self-contained Smoke Alarms for Existing Buildings
- Building Practice Note 13A Fire Safety Systems – Residential Care and Shared Accommodation Buildings
- Building Practice Note GE-05 Determining of building classification

## List of Amendments

- Update format and content review

## Document History

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<b>Topic</b>	Smoke alarms in buildings
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<b>Superseded</b>	<ul style="list-style-type: none"> <li>• Version 2.0, published 28 June 2021, supersedes Practice Note 27a: Automatic smoke detection and alarm systems</li> </ul>
<b>Published</b>	17 March 2023

## Contact Us

If you have a technical enquiry, please email [technicalenquiry@vba.vic.gov.au](mailto:technicalenquiry@vba.vic.gov.au) or call 1300 815 127.

### Victorian Building Authority

Goods Shed North  
733 Bourke Street  
Docklands VIC 3008

[www.vba.vic.gov.au](http://www.vba.vic.gov.au)

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