



14 Edmondstone Street
South Brisbane QLD 4101
PO Box 3573
South Brisbane QLD 4101
t (07) 3021 8800
f (07) 3021 8892
hia.com.au

1 February 2016

Research Director
Legal Affairs and Community Safety Committee
Parliament House

By email: lacsc@parliament.qld.gov.au

Dear Director

Fire and Emergency Services (Smoke Alarms) Amendment bill 2015.

The Housing Industry Association (HIA) has lodged several submissions on the subject of smoke alarms, within the last 12 months. Two reports were for a Senate Enquiry, and a submission to the Australian Building codes Board, (ABCB).

HIA supports the objective of the Bill in retrofitting established homes with hard-wired smoke detectors. However HIA is concerned that the Bill has the potential to confuse the electricians installing the alarms and their customers by introducing siting requirements and restrictions on types of detectors that do not align with the requirements of the National Construction Code (NCC).

The NCC provides a national and consistent approach to smoke detectors in Volume 2 of the Building Code of Australia, (BCA). The current mandatory requirements for smoke alarms are specified in part 3.7.2 of the BCA. The BCA also calls up the Australia Standard AS 3786 "Smoke Alarms", which also provides an avenue to meet compliance under part 3.7.2 of the BCA.

These NCC mandatory requirements, other the interconnection of smoke alarms, are an appropriate measure to be adopted in the Bill for the established housing market. The NCC has resources to undertake thorough research of issues surrounding the selection and installation of alarms and the capacity to update the NCC nationally.

As the NCC evolves there is potential for its requirements to diverge from those contained in the Bill, leading to confusion in the industry.

HIA would recommend to the "Legal Affairs and Community Safety Committee" recommend the maintenance of a consistent approach by adopting by referencing part 3.7.2 of the BCA in the Bill rather than develop its own provisions.

Page 2

A copy of the HIA senate enquiry submission is attached for your reading. In this document you will find feedback from a survey that HIA sent to members on the smoke alarm issues.

For further information contact Kelvin Cuskelly, Assistant Director Building Services HIA on [REDACTED]

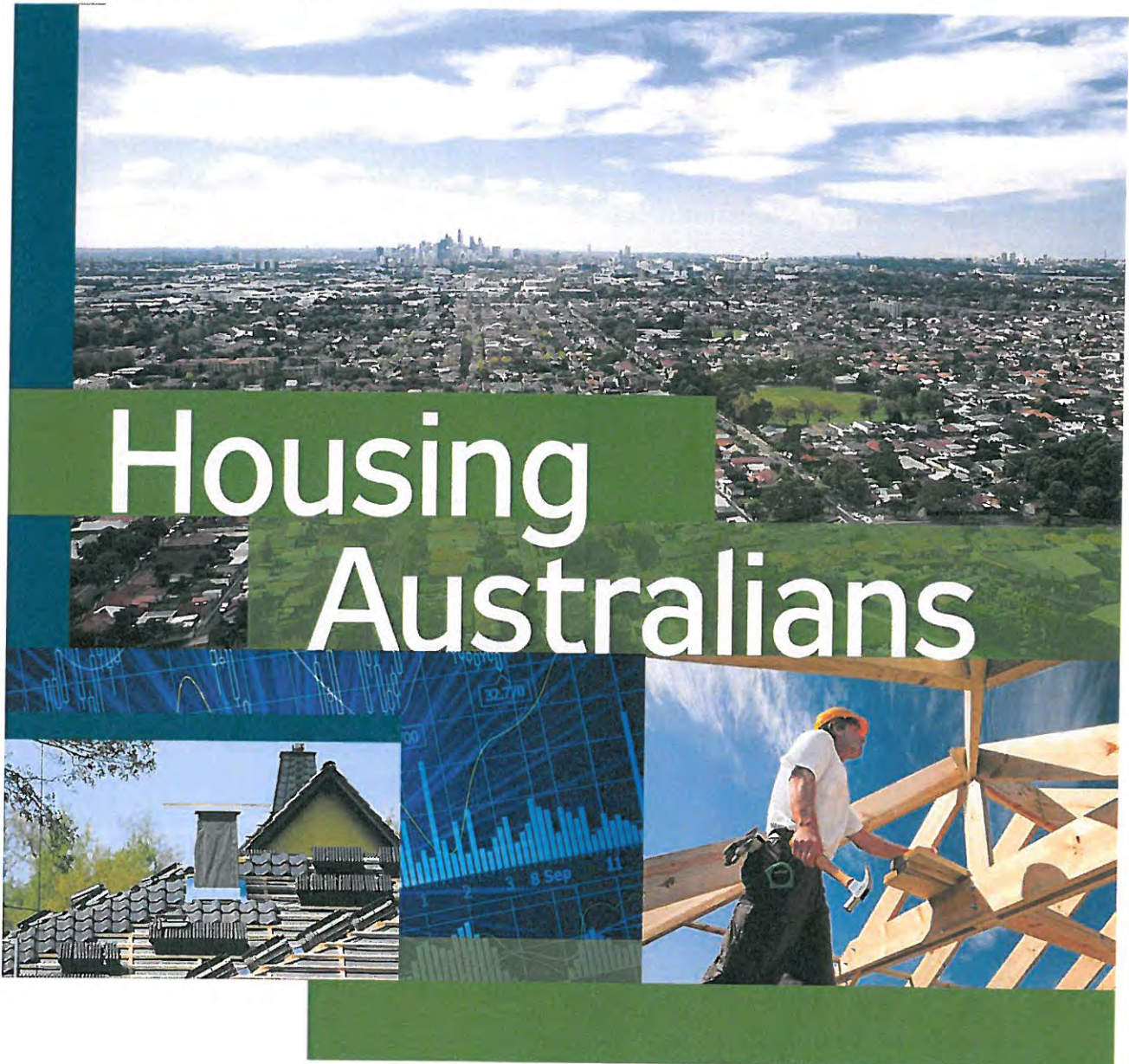
Yours sincerely
HOUSING INDUSTRY ASSOCIATION LIMITED



Warwick Temby
Executive Director - Queensland



HOUSING INDUSTRY ASSOCIATION



Housing Australians

Submission to the
Senate Legal and Constitutional Affairs Reference Committee
on the
**Use of Smoke Alarms to Prevent Smoke and Fire Related
Deaths Inquiry**

31 August 2015

HOUSING INDUSTRY ASSOCIATION



contents

ABOUT THE HOUSING INDUSTRY ASSOCIATION 3

1. INTRODUCTION..... 4

 1.1 TERMS OF REFERENCE 4

 1.2 SCOPE OF SUBMISSION 5

2. SMOKE ALARMS..... 5

 2.1 SMOKE ALARM REQUIREMENTS 5

 2.2 SMOKE ALARM STANDARDS 6

 2.3 SMOKE ALARMS IN EXISTING BUILDINGS 6

3. HIA MEMBER SURVEY 6

4. CONCLUSION 7

APPENDICES: 8

 ATTACHMENT 1: 9

Housing Industry Association contact:

Graham Wolfe
Chief Executive – Industry Policy & Media Relations
Housing Industry Association
79 Constitution Avenue,
CAMPBELL ACT 2600



ABOUT THE HOUSING INDUSTRY ASSOCIATION

The Housing Industry Association (HIA) is Australia's only national industry association representing the interests of the residential building industry, including new home builders, renovators, trade contractors, land developers, related building professionals, and suppliers and manufacturers of building products.

As the voice of the industry, HIA represents some 40,000 member businesses throughout Australia. The residential building industry includes land development, detached home construction, home renovations, low/medium-density housing, high-rise apartment buildings and building product manufacturing.

HIA members comprise a diversity of residential builders, including the Housing 100 volume builders, small to medium builders and renovators, residential developers, trade contractors, major building product manufacturers and suppliers and consultants to the industry. HIA members construct over 85 per cent of the nation's new building stock.

HIA exists to service the businesses it represents, lobby for the best possible business environment for the building industry and to encourage a responsible and quality driven, affordable residential building development industry. HIA's mission is to:

"promote policies and provide services which enhance our members' business practices, products and profitability, consistent with the highest standards of professional and commercial conduct."

The residential building industry is one of Australia's most dynamic, innovative and efficient service industries and is a key driver of the Australian economy. The residential building industry has a wide reach into manufacturing, supply, and retail sectors.

The aggregate residential industry contribution to the Australian economy is over \$150 billion per annum, with over one million employees in building and construction, tens of thousands of small businesses, and over 200,000 sub-contractors reliant on the industry for their livelihood.

HIA develops and advocates policy on behalf of members to further advance new home building and renovating, enabling members to provide affordable and appropriate housing to the growing Australian population. New policy is generated through a grassroots process that starts with local and regional committees before progressing to the National Policy Congress by which time it has passed through almost 1,000 sets of hands.

Policy development is supported by an ongoing process of collecting and analysing data, forecasting, and providing industry data and insights for members, the general public and on a contract basis.

The association operates offices in 23 centres around the nation providing a wide range of advocacy, business support including services and products to members, technical and compliance advice, training services, contracts and stationary, industry awards for excellence, and member only discounts on goods and services.



1. INTRODUCTION

The detection and ensuing warning of a fire event are vital for the fire safety of a building's occupants, particularly the occupants of residential buildings.

Whether a flaming or smouldering fire, occupant evacuation is enhanced through the earlier detection of a fire, immediately followed by an audible alarm or other effective cue to alert the occupants. Early warning can also assist in reducing property damage through subsequent fire suppression actions.

The density and toxicity of smoke generated by a fire will depend on many factors, including the nature and quantum of the combustible material involved in the fire and the existence of any external heat source. Other factors that influence the rate of spread of smoke include the heat generated by the fire, the temperature of the smoke, and any barriers or physical 'curtains' obstructing the movement of smoke.

Most fatal fires in residential buildings occur at night when the occupants are asleep.

In a fire event, due to the temperature of the smoke relative to the ambient air temperature inside a building, toxic smoke will rise to the ceiling before travelling horizontally, spreading through openings into adjoining rooms. As the smoke density increases and/or the temperature of the smoke reduces (away from the heat source), the smoke layer drops down towards the floor.

Sleeping occupants may be overcome by the smoke long before they are affected by heat or flames from the fire.

In addition to providing a first warning for occupants in the event of a fire, smoke alarms located between potential fire sources and occupant sleeping areas provide an audible cue to awake and alert sleeping occupants before they are affected by the smoke, heat or flames of a fire event.

Smoke alarms save lives. They are regulated in all States and Territories through the National Construction Code (NCC) for all new residential buildings, and for alterations and additions to existing homes.

Smoke alarms must be installed in all new Class 1a buildings (houses) in accordance with Part 3.7.2 of Volume Two of the NCC. Smoke alarms must comply with Australian Standard AS 3786 (1993) – *Smoke alarms*, be connected to the consumer mains power where power is supplied to the building, and be interconnected where there is more than one alarm. They must be located between each area containing bedrooms and the remainder of the house, on each storey of a home, and should be located on or near the ceiling.

1.1 TERMS OF REFERENCE

This submission to the Legal and Constitutional Affairs Reference Committee has been prepared to address the terms of reference for the Inquiry into the use of smoke alarms to prevent smoke and fire related deaths. The terms of reference make particular reference to:

- a. *the incidence of smoke and fire related injuries and deaths and associated property damage;*
- b. *the immediate and long term effects of such injuries and deaths;*
- c. *how the use, type and installation set-ups of smoke alarms could affect such injuries and deaths;*
- d. *what smoke alarms are in use in owner-occupier and rented dwellings and their installation set-ups;*



- e. *how the provisions of the Australian Building Code relating to smoke alarm type, installation and use can be improved;*
- f. *whether there are any other legislation or regulatory measures which would minimise such injuries and deaths; and*
- g. *any related matters.*

1.2 SCOPE OF SUBMISSION

HIA understands the terms of reference for the Inquiry relate to residential buildings where occupants reside, and do not extend to buildings used for commercial, industrial, retail or other non-residential purposes.

We further understand that the terms of reference relate to self-contained smoke alarm units that contain the smoke detection and alarm mechanism within a single device.

As well as triggering a local alarm in a building, smoke detection devices can activate many other fire safety management systems, including stair pressurisation, smoke extraction and other air handling operations; automatic alerts to fire brigades/authorities; closure of fire separating barriers; and early warning and intercommunication systems (including evacuation procedures). These systems are not covered in this submission.

This submission considers the use of self-contained smoke detection and alarm units in Class 1 buildings – that is, in houses.

2. SMOKE ALARMS

2.1 SMOKE ALARM REQUIREMENTS

The NCC is a nationally consistent building code. It was developed by the Australian Building Codes Board (ABCB), via an Inter-Government Agreement between the Commonwealth, State and Territory Governments. The ABCB continues to maintain the NCC, through the coordinated efforts of the States and Territories.

The requirements of the NCC are mandated in each individual State and Territory jurisdiction through their respective building legislation/regulation.

The mandatory requirements for smoke alarms as specified in the NCC apply across Australia.

Part 3.7.2 of Volume Two of the NCC requires the installation of smoke alarms in all new Class 1 buildings – houses. The NCC provides details on the location requirements for smoke alarms in relation to bedrooms, ceilings and storeys. It refers to Australian Standard AS 3786 (1993) – *Smoke alarms*, in relation to the compliance requirements for the smoke alarm unit. The NCC does not specify that a certain type of smoke detection system must be used in a smoke alarm unit.

The ABCB has reviewed the provisions of Part 3.7.2 on several occasions. The reviews have considered the location of smoke alarms near and within bedrooms, their proximity to possible sources of heat, proximity to sources of air borne contaminants that may cause false alarms (kitchens, garages and bathrooms), inter-connection, alarm noise levels, distance from ceilings and the system of smoke detection.

HIA has developed a member Information Sheet 'Smoke Alarm Requirements' to assist members with the requirements of Part 3.7.2 of the NCC (copy attached).



2.2 SMOKE ALARM STANDARDS

Australian Standard AS 3786 (1993) – *Smoke alarms*, "specifies the requirements for the design and performance of electronically operated smoke alarms containing both detection and alarm facilities." (Scope of AS 3786 - 1993)

The standard specifies a range of general requirements, including power supply, stand-by/back-up power supply, battery connections, materials, mounting and connecting facilities, sensitivity adjustments and alarm signals, and provides specific performance and product marking requirements.

The standard provides for both photoelectric and ionisation type smoke detection systems, and while it does not indicate which type to use, it specifies the sensitivity levels and the testing schedule and criteria to be used to assess compliance.

The latest revision of the standard (amendment No. 4) was published in April 2004.

In February this year, Standards Australia published Australian Standard AS 3786 (2015) - *Smoke alarms using scattered light, transmitted light ionisation*. To date, this standard has not been referenced in the NCC.

2.3 SMOKE ALARMS IN EXISTING BUILDINGS

In addition to the State/Territory laws that apply the NCC's smoke alarm provisions to new houses and to existing houses that undergo alterations and additions, a number of jurisdictions have introduced mandatory laws requiring smoke alarms in existing, physically unaltered houses, for example when an existing house changes ownership or is a rental property. The specific requirements under the laws applying to existing unaltered houses vary from state to state, including whether they must be hard-wired or battery powered.

Except in the Northern Territory, where photoelectric smoke alarms are mandated, State/Territory laws applying to existing houses do not specify the type of unit to be installed.

3. HIA MEMBER SURVEY

HIA undertook a survey of a small number of members to ask about the use of smoke alarms in their projects. Although the sample size is small (due to the limited timeframe to lodge a submission), the responses provide information about the specification of smoke detectors in houses:

1. Do you specify the type of smoke alarm to be installed on your jobs?
45 per cent of the responses said that they did specify the type of smoke detectors for their projects, 30 per cent do not specify the type (but did require compliance with the NCC), while the remaining 25 per cent instruct their electrical contractors to install smoke detectors in accordance with AS3786.
2. What type of smoke alarms are specified?
45 per cent usually install ionisation type smoke detectors, 15 per cent specify photoelectric type, while 40 per cent provide both types.
3. Have you been asked to install a specific type of smoke alarm by the architect/client?
Over 70 per cent said they had not been asked to install a specific type of smoke detector, 15 per cent said they had been asked, while 15 per cent said they had rarely been asked.
4. Have you received any client/occupant feedback about the operation of a smoke detector?
40 per cent said they had not received any feedback, while 60 per cent said that they had received feedback, of which 100 per cent said the feedback related to false alarms.



4. CONCLUSION

Smoke alarms do not prevent, suppress or extinguish fires in homes. They do however provide for detection and early warning of a fire to alert the building's occupants, enabling them to more swiftly respond to a fire event. That response may be to safely evacuate themselves and others, or to take some action to extinguish the fire or to minimise property damage.

For sleeping occupants, the early warning provided by a smoke alarm may awaken them before they are overcome by smoke or affected by heat or flame.

The NCC regulates the provision of smoke alarms in new buildings, and alterations and additions to existing buildings. While the NCC specifies the location of smoke alarms, it does specify the type to be installed. Except in regard to homes undergoing alterations and additions, the NCC does not apply to existing houses – State and Territory legislation regulates the extent, if any, for smoke alarms to be installed in existing homes.

False alarms are a fairly frequent occurrence, and could influence negatively on occupant behaviour, for example, where owners/occupiers respond to false alarms by covering, disengaging or removing smoke alarm unit(s).



APPENDICES:

ATTACHMENT 1: Smoke Alarm Requirements



ATTACHMENT 1:



INFORMATION SHEET

BUILDING SERVICES

Current at: April 2014

Ref: BCA 14-02

SMOKE ALARM REQUIREMENTS

This Information Sheet relates to smoke alarms in Class 1a buildings only (as defined by the *National Construction Code*). Class 1a buildings are a single dwelling being:

- (i) a detached house; or
- (ii) one or more dwellings each being a building, separated by a fire-resistant wall, including a row house, terrace house, town house or villa.

Smoke alarms save lives and they are regulated in all states through the *Building Code of Australia* (BCA) for all new houses and alterations and additions to existing homes.

Most fatal fires occur at night when people are asleep. What happens in a fire is that the house fills with toxic smoke long before heat and flame spreads and it is this smoke that numbs the senses and further leaves the occupants more soundly asleep. Most fatalities are never touched by flames. Smoke alarms therefore give a first warning and provide that extra time to escape.

INSTALLATION AND CONNECTION OF SMOKE ALARMS

Smoke alarms **must** be:

- located in Class 1a buildings in accordance with the BCA clause 3.7.2.3,
- comply with *AS 3786 Smoke alarms*,
- be connected to the consumer mains power where consumer power is supplied to the building; and
- be interconnected where there is more than one alarm.

Smoke alarms should be installed on or near the ceiling with special care being taken to avoid dead air spaces. A dead air space is an area in which trapped hot air will prevent smoke from reaching the alarm. This space generally occurs at the apex of cathedral ceilings, the corner junction of walls and ceilings, between exposed floor joists etc.

If it is impractical to mount the smoke alarm on the ceiling then it may be located on the wall. The recommended position is between 300 mm and 500 mm off the ceiling. The distance from the apex of a cathedral ceiling to the top of the alarm should be between 500 and 1500 mm.

Where should smoke alarms be placed?

When deciding on the position of smoke alarms it is important to remember that they are intended to detect smoke before it reaches the sleeping occupants of a building. The ensuing alarm is designed



to wake the occupants and give them time to evacuate the building. The BCA provisions require that a smoke alarm be located “between each area containing bedrooms and the remainder of the dwelling”.

Smoke alarms on other storeys

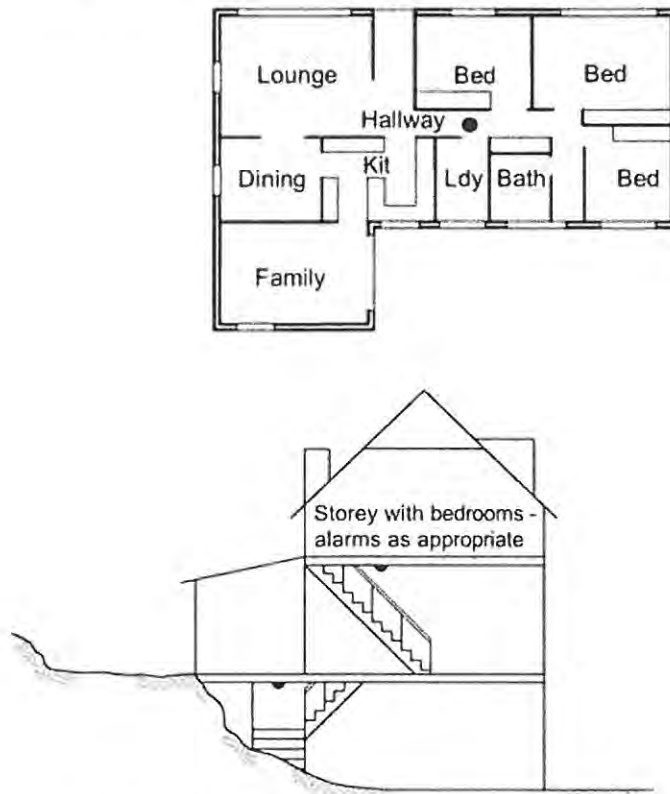
Smoke alarms **must** be installed in a Class 1a building on or near the ceiling in-

- (a) any storey containing bedrooms –
 - between each part of the dwelling containing bedrooms and the remainder of the dwelling; and
 - where bedrooms are served by a hallway, in that hallway, and
- (b) any other storey not containing bedrooms.

The favoured location for this ‘other alarm’ if required is generally in the path of travel people will most likely take to evacuate the building. This will ensure an alarm will be raised before smoke makes the common exit path impassable e.g. if the bedrooms are on the first floor, then an alarm should be positioned near the area of the interconnecting stair at ground level. If the other storey is not connected to the remainder of the building (for instance a ground floor garage) then the alarm should be centrally located in the lower area.

However, it may be reasonable, using a performance approach, not to install smoke alarms where the storey is predominantly open, such as the basement level of a highset house on stumps that is used for carparking or laundry purposes.

Class 1a buildings



(a) Smoke alarms installed on each storey not containing bedrooms — located in the area of the stairway



Is there any flexibility when deciding where to place a detector?

The BCA Performance Requirements gives the building certifier flexibility when considering the location of smoke alarms. For instance, in Class 1a buildings if the deemed-to-satisfy Provision states that the smoke alarm should be located in the hallway, and there is a bathroom adjacent this location (that will potentially cause nuisance alarms) the certifier could accept the alarm being installed in the bedroom as a suitable option using the performance clause.

This approach should also be adopted when considering sleep-outs or similar type residential buildings that are not connected to the remainder of the building by a hallway or other enclosed structure. In these situations the alarm could be located in the room itself.

INTERCONNECTION OF SMOKE ALARMS

BCA 2014 has introduced a **new** requirement that smoke alarms **must** be interconnected to provide a common alarm system. This means that if one alarm in the dwelling activates then other alarms automatically activate, which will increase the likelihood of sleeping occupants becoming aware of the detection of smoke.

Where the construction work involved is an alteration or additions to the main dwelling, it is recommended that any existing smoke alarms be interconnected if a new smoke alarm is required for the addition. It is recommended that you speak with your electrician about the interconnection requirement before starting work to ensure that this can be done in the most practical way possible.

(see Information Sheet: Changes for BCA 2014 start 1 May)

SMOKE ALARMS

How Does a Smoke Alarm Work?

There are two types of smoke alarms:

- Photoelectric: This type of smoke alarm uses a light source and photocell. As the smoke enters the detection chamber it interferes with the light beam which in turn causes the alarm to sound.
- Ionisation: A small amount of radioactive material is used to create an electrical current that travels through ionised air. When smoke enters the detection chamber it impedes the flow of current and causes the alarm to sound.

Nuisance Alarms

Smoke alarms are extremely sensitive and may detect smoke and moisture created by common household activities (such as burnt toast or steam from a bathroom). Accordingly, to reduce the likelihood of nuisance alarms, the smoke alarm should not be located near cooking appliances and bathrooms. However if it is necessary to locate alarms in these positions, an ionisation type alarm is more suitable near bathrooms, while a photoelectric alarm may be used near cooking appliances.

For further information HIA members can contact HIA Building Services staff on 1300 650 620

