Chapter 1

Introduction and background

Referral of the inquiry

1.1 On 25 June 2015, the Senate referred the following matter to the Legal and Constitutional Affairs References Committee for inquiry and report by 3 December 2015:

> The use of smoke alarms to prevent smoke and fire related deaths, with particular reference to:
>
> a) the incidence of smoke and fire related injuries and deaths and associated damage to property;
>
> 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-occupied and rented dwellings and the 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 legislative or regulatory measures which would minimise such injuries and deaths; and
>
> g) any related matter.

Extension of reporting date

1.2 On 12 November 2015 the Senate agreed to extend the reporting date for the inquiry to 16 March 2016. On 16 March 2016, the inquiry was extended again to 30 June 2016.

Conduct of the inquiry

1.3 Details of the inquiry were made available on the committee website. The committee also wrote to relevant organisations inviting submissions due 31 August 2015. The committee received 29 submissions, one of which was confidential. A list of submissions is at Appendix 1.

1.4 Three public hearings were held:

- Brisbane on 26 October 2015;
- Canberra on 4 December 2015; and
- Canberra on 22 February 2016.

1.5 The list of witnesses who gave evidence is at Appendix 2.

References to the Hansard transcript

1.6 References to the committee Hansard are to the proof Hansard. Page numbers may vary between the proof and the official transcript.

Acknowledgement

1.7 The committee thanks all those individuals and organisations who provided submissions and gave evidence at the public hearings.

Report structure

1.8 There are three chapters in this report.

1.9 The remainder of this chapter describes some recent fire tragedies in Australia and outlines the regulatory scheme as it applies to smoke alarms in residential settings currently.

1.10 Chapter 2 analyses data on fire related incidents in Australia, including smoke and fire-related deaths, injuries and property damage.

1.11 Chapter 3 considers the types and use of smoke alarms in residential settings.

Recent fire tragedies in Australia

1.12 There have been a number of recent fire tragedies in Australia. Sadly, some of these tragedies are particularly notable on account of the number of lives lost.

Slacks Creek fire

1.13 On 24 August 2011, 11 members of the same family were killed in a house fire in the Queensland suburb of Slacks Creek. Three women, four teenagers and four children under the age of 10 died in the fire, which has been described as Australia's worst house fire.[1] One of the survivors, Mr Tau Taufa, told the coronial inquest that:

> he remembered a smoke alarm sounding once in the 1990s and someone turned it off to get rid of the noise, but he could not remember if it was turned on again.
>
> Mr Taufa told the inquest he tried to put out the fire and he called out to those inside the house, but did not hear them.[2]

1.14 It was found that the house was fitted with two smoke alarms, neither of which had worked for years.[3]

Golinski fire

1.15 In the early hours of 26 December 2011, a fire tore through the Sunshine Coast home of chef Mr Matt Golinski, killing his wife and their three daughters.[4] The

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1 Emma Pollard and Leonie Mellor, 'Logan fire inquest: Coroner examines nation's worst domestic fire tragedy at Slacks Creek', *ABC News*, 19 August 2014, available: http://www.abc.net.au/news/2014-08-18/logan-inquest-coroner-examine-fatal-fire-slacks-creek/5677946 (accessed 8 March 2016).

2 Emma Pollard and Leonie Mellor, 'Logan fire inquest: Coroner examines nation's worst domestic fire tragedy at Slacks Creek', *ABC News*, 19 August 2014.

3 Dea Clark, 'Logan fire inquest: Impossible to determine cause of Slacks Creek house blaze that killed 11 people', *ABC News*, 19 September 2014, available: http://www.abc.net.au/news/2014-09-19/logan-fire-inquest-impossible-to-determine-cause-of-fatal-fire/5756094 (accessed 8 March 2016).

coroner identified a four outlet power board, the 240V Christmas lights and other electrical equipment close to the Christmas tree as possible sources of the fire.

1.16 The coroner's report stated that 'smoke alarms had failed to raise the family and by the time Mr Golinksi's wife Rachael awoke, the Tewantin home on the Sunshine Coast was engulfed in flames' and concluded 'if the smoke alarms had been functioning effectively the deaths could have been prevented'.[5]

Dunkeld fire

1.17 In March 2012 two children died in a house fire at Dunkeld in Victoria. The fire was believed to have started at approximately 3.00 am[6] and, according to Victorian police, was the result of a slow-combustion burner that ignited debris accumulated around the flue.[7] The parents awoke but due to the intensity of the fire were unable to reach their children.

Current regulatory scheme for residential smoke alarms

1.18 The residential smoke alarm regulatory scheme in Australia consists of:

- the National Construction Code (NCC);
- Australian Standards dealing with smoke alarms; and
- state and territory legislation and subordinate legislation.

1.19 As the remainder of this chapter demonstrates, the current regulatory scheme is complex. The smoke alarm regulations that apply to a dwelling vary depending on:

- when the property was constructed;
- in which state or territory it is located; and
- how the building is classified under the NCC.

Development of the National Construction Code

1.20 In 2008, the Council of Australian Governments (COAG) published the *National Partnership Agreement to Deliver a Seamless National Economy*, an agreement between the Commonwealth, states and territories. This agreement stated that the states and territories were responsible for working together to implement a

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4 Kym Agius, 'Matt Golinski fire: Christmas tree lights or power board "likely cause" of fatal blaze at TV chef's home', *ABC News*, 5 December 2015, available: http://www.abc.net.au/news/2015-12-05/christmas-tree-lights-coroner-matt-golinski-fatal-house-fire/7004180 (accessed 8 March 2016).

5 Kym Agius, 'Matt Golinski fire: Christmas tree lights or power board "likely cause" of fatal blaze at TV chef's home', *ABC News*, 5 December 2015.

6 Henrietta Cook and Nino Bucci, 'Screams heard as children's bodies found in burnt-out house', *The Age*, 23 March 2012, available: http://www.theage.com.au/victoria/screams-heard-as-childrens-bodies-found-in-burntout-house-20120322-1vnjs.html (accessed 8 March 2016).

7 Paul Cleary, 'Fatal flaw of cheap heat', *The Australian*, 28 May 2012, available: http://www.theaustralian.com.au/news/inquirer/fatal-flaw-of-cheap-heat/story-e6frg6z6-1226368667384 (accessed 8 March 2016).

coordinated national approach to construction requirements,[8] and that they would have shared responsibility with the Commonwealth for regulatory reform.[9] While building and plumbing codes already existed separately, this Agreement was to consolidate them. Volumes One and Two of the NCC make up the Building Code of Australia (BCA), which sets out the minimum standards for smoke alarms in residential buildings.

1.21 The NCC was adopted by each state and territory from 1 May 2011,[10] which gave the document legal effect. Any provision of the NCC may be overridden by, or subject to, state or territory legislation.[11] The NCC must therefore be read in conjunction with the relevant state or territory's legislation in order to determine the relevant requirements.

Smoke alarm regulation under the BCA

1.22 The smoke alarm installation requirements in the BCA differ depending on the relevant building's classification. Residential buildings may be classified as:

- Class 1a - a single dwelling (for example a detached house);[12]
- Class 1b - a boarding house, guest house or hostel in which more than 12 people would ordinarily be resident, or 4 or more single dwellings on one allotment for short-term accommodation;[13]
- Class 2 - building containing two or more sole occupancy units each being a separate dwellings (for example an apartment);[14]
- Class 3 - a residential building other than classes 1 or 2, which are a common place of long-term or transient living for a number of unrelated persons, including a boarding house, hostel, backpackers accommodation, hotel or motel, residential part of a school, or accommodation for the aged, children or people with disabilities;[15] and

8 Council of Australian Governments (COAG), *National Partnership Agreement to Deliver a Seamless National Economy* (2008), p. 6.

9 COAG, *National Partnership Agreement to Deliver a Seamless National Economy* (2008), p. 6.

10 *Building Act 2004* (ACT), s. 136(1); *Building (General) Regulations 2008* (ACT) reg. 43A; *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 98; *Fire and Emergency Regulations* (NT), part 2A; *Building Act 1975* (QLD), s.12; *Fire and Emergency Services Act 1990* (QLD), division 5A; *Development Regulations 2008* (SA), reg. 4; *Building Act 2000* (TAS), reg. 55; *Building Regulations 2006* (VIC), reg. 109; and *Building Regulations 2012* (WA).

11 Australian Building Codes Board (ABCB), *National Construction Code (NCC)*, vol. 1, p. 8.

12 ABCB, *NCC*, vol. 2, cl. 1.3.2.

13 ABCB, *NCC*, vol. 2, cl. 1.3.2.

14 ABCB, *NCC*, vol. 1, cl. A3.2.

15 ABCB, *NCC*, vol. 1, cl. A3.2.

- Class 4 - a dwelling found in a class 5 (office), 6 (shop, showroom or café), 7 (carpark, storage or production of wholesale goods), 8 (laboratory or goods facility) or 9 (healthcare or assembly building such as a school) building as long as it is the only dwelling in that building.[16]

1.23 In all dwellings constructed after 1 May 2011, or dwellings where substantial building work is taking place, the smoke alarms must:

- comply with Australian Standard (AS) 3786;
- be connected to consumer mains power (where supplied to building);
- be interconnected where there is more than one alarm; and
- be located on or near the ceiling on each storey.

1.24 A detailed description of further regulations that apply to particular classes of building is at Appendix 3.

1.25 The smoke alarms installed in a newly constructed dwelling must comply with the performance requirement that occupants are 'provided with automatic warning on the detection of smoke so that they may evacuate in the event of a fire to a place of safety'.[17] Smoke alarms will comply with this if:

- they are 'deemed-to-satisfy' the requirement; or
- employ an alternative solution that is at least equivalent to the 'deemed-to-satisfy' provision, or complies with the relevant performance requirements.[18]

1.26 Two jurisdictions have supplemented the requirements of the NCC. In the Northern Territory smoke alarms must be photoelectric only, and must be hard wired or powered by a sealed 10 year lithium battery unit.[19] In Tasmania, as of 1 May 2016, all tenanted premises must have smoke alarms powered by mains power or a 10 year non-removable battery.[20]

Australian Standard 3786

1.27 AS 3786 sets out the technical requirements for smoke alarms using scattered light, transmitted light or ionisation, and intended for residential application.[21] AS 3786 sets out the technical requirements for smoke alarms, including:

- a primary and secondary power source;[22]
- battery connections and the replacement of user-replaceable batteries;[23]

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16 ABCB, *NCC*, vol. 1, cl. A3.2.

17 ABCB, *NCC*, vol. 2, part 2.3.2; and vol. 1, objective EP2.1.

18 ABCB, *NCC*, vol. 1, cl. A0.5.

19 *Fire and Emergency Regulations* (NT), reg. 13A(3).

20 *Residential Tenancy (Smoke Alarms) Regulations 2012* (TAS), regulations 7-8.

21 Standards Australia (SA), *Australian Standard (AS) 3786-2014*, part 1.

22 SA, *AS 3786-2014*, clauses 4.9-4.10.

- optional requirement where alarms are inter-connectable;[24]
- the presence of radioactive material;[25]
- markings to be present on the alarm including point of sale packaging;[26] and
- data to be supplied with the alarm including instructions on installation and maintenance.[27]

1.28 It also specifies that photoelectric and ionisation smoke alarms must activate within a particular 'range' when exposed to the following types of fire:

- smouldering pyrolysis wood fire;[28]
- glowing smouldering cotton fire;[29]
- flaming plastics (polyurethane) fire;[30] and
- flaming liquid (*n*-heptane) fire.[31]

1.29 AS 3786 sets out a detailed testing regime for smoke alarm accreditation. The test must:

> (a) Measure the response threshold value of the specimen to be tested eight times…with the specimen being rotated 45° about its vertical axis between each measurement, so that the measurements are taken for eight different orientations relative to the direction of airflow.
>
> (b) Designate the maximum response threshold value as y_{max} or m_{max} and the minimum value as y_{min} or m_{min}.
>
> (c) Record the least sensitive orientation and the most sensitive orientation.[32]

1.30 The response value threshold is:

> … the aerosol density (*m* or *y*) at the moment that the specimen gives an alarm condition. This shall be recorded as *m*, expressed as decibels per metre, for smoke alarms using scattered or transmitted light, or as *y* for

23 SA, *AS 3786-2014*, clauses 4.12-4.13.

24 SA, *AS 3786-2014*, cl. 4.18.

25 SA, *AS 3786-2014*, cl. 4.20.

26 SA *AS 3786-2014*, cl. 4.22.

27 SA, *AS 3786-2014*, cl. 4.23.

28 SA, *AS 3786-2014*, appendix G.

29 SA, *AS 3786-2014*, appendix H.

30 SA, *AS 3786-2014*, appendix I.

31 SA, *AS 3786-2014*, appendix J.

32 SA, *AS 3786-2014*, cl. 5.2.2.

> smoke alarms using ionization and measured with the smoke-measuring instruments specified...[33]
>
> The ratio of the response threshold values y_{max}: y_{min} or m_{max}: m_{min} shall be not greater than 1.6.
>
> The lower response threshold value y_{min} shall be not less than 0.2 or m_{min} shall be not less than 0.05 dB/m.[34]

Structures constructed prior to the commencement of the NCC

1.31 The BCA sets out the minimum standards for smoke alarm installation in new residential buildings, and existing buildings subject to major new building work. The requirements for smoke alarms in buildings constructed before the NCC commenced are set out in state and territory legislation. When determining the legislative requirement with regards to existing structures, there are three considerations:

- how would the building in question be classified under the BCA?
- does the relevant state or territory require a smoke alarm for the particular building class? And,
- if so, what are the particular requirements for a building of that class in the relevant jurisdiction?

1.32 The requirement to have smoke alarms in existing structures are set out in Figure 1.1.

1.33 In addition to the requirement to have smoke alarms in buildings constructed prior to the NCC, there are other various requirements in different states and territories. For example, in the Australian Capital Territory (ACT), the unaltered part of a substantially altered Class 1 building does not have to comply with the BCA as a whole if the unaltered part complies with BCA Volume II part 3.7.2.[35]

1.34 In buildings featuring sole occupancy units within a larger structure (for example apartment buildings), fire detection systems in the common areas are regulated separately. The smoke alarm requirements discussed here only relate to the sole occupancy unit areas of the building.

1.35 In some jurisdictions, the requirement to install a smoke alarm is triggered by an event. In Tasmania, smoke alarm regulations apply only to existing properties which are tenanted.[36] In WA, only existing premises being tenanted, sold, or hired require smoke alarms.[37]

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33 SA, *AS 3786-2014*, cl 5.1.6.

34 SA, *AS 3786-2014*, cl. 5.2.3.

35 *Building (General) Regulation 2008* (ACT), reg. 24(1)(b).

36 See, *Residential Tenancy Act 1997* (TAS); and *Residential Tenancy (Smoke Alarms) regulations 2012* (TAS).

37 *Building Regulations 2012* (WA), regs 56-59.

Figure 1.1: Requirement for smoke alarms in buildings constructed prior to the NCC[38]

	Class	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Stand alone	**1a**	√	√	√	√	√	√	√	√
	1b	√	√	√	√	√	√	√	√
Units	**2**		√	√	√	√	√	√	√
	3		√	√			√	√	√
	4		√	√			√	√	√

1.36 The specific requirements for smoke alarms in existing buildings vary across the states and territories. A detailed outline of these requirements is set out at Appendix 4. To summarise these requirements:

- smoke alarms must comply with AS 3786;[39]
- interconnection of alarms is required in some cases;[40]
- all jurisdictions allow the use of both photoelectric and ionisation smoke alarms, except the NT which requires that only photoelectric alarms be used;[41]
- in most jurisdictions the alarm can be powered by either a 10 year non-removable battery or be hard wired;[42]
- requirements with regards to the location of smoke alarms either directly reference the BCA, or are similar to the BCA;[43]

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38 FPA, *Submission 18*¸*p. 26.*

39 See, *Building Act 2004* (ACT), s. 42(1); *Building (General) Regulation 2008* (ACT), reg. 24(1)(b); *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186B(1); *Development Regulations 2008* (SA), reg. 76B(1); *Residential Tenancy (Smoke Alarms) Regulations 2012* (TAS), reg. 6; *Building Regulations 2006* (VIC), reg. 707; *Building Regulations 2012* (WA), reg. 60(2); *Fire and Emergency Services Act 1990* (QLD), s. 104RB(2); and *Fire and Emergency Regulations* (NT), reg. 13A(3).

40 See, *Building Act 2004* (ACT), s. 42(1); *Building (General) Regulation 2008* (ACT), reg. 24(1)(b); *Fire and Emergency Regulations* (NT), reg. 13B; *Development Regulations 2008* (SA), reg. 76B; *Fire and Emergency Services Act 1990* (QLD), s. 104RB; and *Building Regulations 2012* (WA), reg. 60(4).

41 *Fire and Emergency Regulations* (NT), reg. 13A(3)

42 *Building Act 2004* (ACT), s. 42(1); *Building (General) Regulation 2008* (ACT), reg. 24(1)(B); *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186B(2); *Fire and Emergency Regulations* (NT), reg. 13A(3); *Fire and Emergency Services Act 1990* (QLD), s. 104RB; *Development Regulations 2008* (SA), reg. 76B; *Residential Tenancy (Smoke Alarms) Regulations 2012* (TAS), reg. 8; *Building Regulations 2006* (VIC), reg. 709; and *Building Regulations 2012* (WA), reg. 60(2).

- the owner is responsible for installing the smoke alarms;[44] and
- in most jurisdictions there are penalties for the removal of or interference with smoke alarms.[45]

43 *Building Act 2004* (ACT), s. 42(1); *Building (General) Regulation 2008* (ACT), reg. 24(1)(b); *Fire and Emergency Regulations* (NT), reg. 13B; *Fire and Emergency Services Act 1990* (QLD), s. 104RB(2); *Development Regulations 2008* (SA), reg. 76B; *Building Regulations 2012* (WA), reg. 60; *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186A; and *Residential Tenancy (Smoke Alarms) regulations 2012* (TAS), regulations 9-13.

44 *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186A; *Fire and Emergency Regulations* (NT), reg. 13A(1); *Fire and Emergency Services Act 1990* (QLD), s. 104RB(1); *Residential Tenancy (Smoke Alarms) Regulations 2012* (TAS), regulations 17-19; *Building Regulations 2006* (VIC), reg. 707(4), 709(8); *Building Regulations 2012* (WA), regulations 56-59; and *Development Regulations 2008* (SA), reg. 76B(4).

45 *Environmental Planning and Assessment Regulation 2000* (NSW), reg. 186C; *Environmental Planning and Assessment Act 1979* (NSW), s. 125; *Fire and Emergency Regulations* (NT), reg. 13G; *Fire and Emergency Services Act 1990* (QLD), s. 104RH; *Residential Tenancy Act 1997* (SA), s 36F; and *Residential Tenancy Act 1997* (TAS), s. 36F(1).