ADVISORY NOTICE *BUILDING*

03/18

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Advisory Notices are issued to assist in the interpretation of the Development Act 1993	*August 2018*

TECHNICAL:
Private Bushfire Shelters

This Advisory Notice provides information about the statutory requirements to obtain development plan consent (in some cases) and building rules consent for private bushfire shelters.

BACKGROUND

The Building Code of Australia (BCA) classifies private bushfire shelters as Class 10c buildings which must meet the BCA Performance Requirement P2.3.5. Given there are no Deemed-to-Satisfy provisions, a *Performance Standard for Private Bushfire Shelters* (Performance Standard), was developed and published by the Australian Building Codes Board (ABCB) to provide guidance on achieving compliance with Performance Requirement P2.3.5.

DISCUSSION

In South Australia, the *Development Act 1993* and Development Regulations 2008 (the Regulations) requires a private bushfire shelter to be assessed on an application by application basis and concurrence obtained from the Building Committee (formerly the Building Rules Assessment Commission) prior to the relevant authority (Council or private certifier) issuing building rules consent. In some circumstances, development plan consent is also required.

The provision for obtaining concurrence is required given that there are no nationally accredited private bushfire shelters and there are significant life safety concerns with this type of building.

Development plan consent

Schedule 1A of the Regulations specifies the circumstances in which a private bushfire shelter is exempt from obtaining development plan consent. A development plan consent is not required unless any part of the private bushfire shelter is, or will be, located:

a) in front of any part of the building line of the building with which it is associated; or
b) within 900 millimetres of a boundary of the land with a secondary street (if the land has boundaries on 2 or more roads); or
c) within 6 metres of the intersection of 2 boundaries of the land where those boundaries both face a road, other than where a 4×4 metre corner cut-off has already been provided (and is to be preserved).

Building rules consent and obtaining concurrence

The relevant authority is required to undertake a complete assessment of the private bushfire shelter and be of the view to grant building rules consent before applying to the Building Committee for concurrence. Building rules consent can only be granted after concurrence has been issued by the Building Committee.

Each and every application lodged to the Building Committee for concurrence will require:

- A completed application form and payment of the relevant fee; and
- Full and comprehensive documentation detailing how the criteria in P2.3.5 has been achieved. This includes the documentation required by Schedule 5 of the Regulations and the BCA. For example, should the Performance Standard be used, the assessment should demonstrate how the **acceptance criteria** in Table 2.4 (detailed in Attachment 1 to this notice), have been achieved.

The Building Committee must be satisfied that the assessment undertaken by the relevant authority complies with Performance Requirement P2.3.5. **It is not the role of the Building Committee to design or assess the application.**

Building compliance inspections

There appear to be instances where private bushfire shelters are being incorrectly classified as Class 10a, thereby circumventing concurrence from the Building Committee. Councils are reminded of the need to be vigilant where they are aware of high-risk buildings such as private bushfire shelters and to apply their inspection and enforcement powers accordingly.

Accreditation of building products

The Building Committee is not an accreditation body and does not accredit building products or systems. The South Australian government does not accredit products or systems.

National accreditation of building products and systems is provided by the ABCB CodeMark Scheme, which is a recognised accreditation body under regulation 105 of the Regulations.

Other matters for consideration

Where a licensed building work contractor has been engaged to install or construct the shelter, a certificate of building indemnity insurance may be required to be provided as part of the assessment documentation in accordance with Regulation 21.

Similarly, evidence of payment of the Construction Industry Training Levy may be required in accordance with Regulation 79, prior to the issuing building rules consent.

Information for shelter owners

To help mitigate the impact of a bushfire, owners should maintain their property appropriately, including managing vegetation, ensuring adequate water supply, improving access tracks and general maintenance.

Owners should also consider and develop a bushfire survival plan to be followed in the event of a bushfire, including understanding the circumstances when their private bushfire shelter may be used. The Country Fire Service has templates and guidance to help with the development and use of a bushfire survival plan.

Table 2.4 – Acceptance Criteria (from the Performance Standard)

COMPONENT OF DESIGN	ACCEPTANCE CRITERIA	INFORMATIVE COMMENT
LOCATION		
Distance between an associated dwelling and a shelter	Minimum of 6 m or 1.5 times the height of the dwelling, whichever is the greater.	Separation reduces interaction between the associated dwelling and a shelter
Distance to an allotment boundary	Minimum of 6 m	Separation reduces interaction between the shelter and the risks beyond an allotment boundary.
Distance to an adjacent structure	Minimum of 6 m or 1.5 times the adjacent structure height, whichever is the greater.	Adjacent structures include sheds, carports etc.
Distance to other fuel sources	Minimum of 6 m.	Fuel sources include wood piles, fences, cubby houses, vehicles, gas bottles, fuel or similar combustibles.
ACCESS FROM THE DWELLING TO THE SHELTER		
Travel distance between the associated dwelling and the shelter	Maximum 20 m	Nil.
ACCESS PATHWAYS BETWEEN THE DWELLING AND THE SHELTER		
Surface of pathways	Must be non-combustible	Access pathways should be readily identifiable and have a relatively even surface.
Unobstructed width	Minimum clear width of 1 m	Vegetation adjacent to a pathway should not be a hazard to travel.
PROVISION OF TENABLE CONDITIONS WITHIN A SHELTER		
Duration of occupancy	Minimum 60 minutes	The minimum period of occupation for which a tenable environment must be maintained. The minimum duration of occupancy is the period the shelter is required to be sealed in order to prevent occupant exposure to untenable conditions. It is assumed that occupants will not seal a shelter until exposure to untenable conditions is imminent. A shelter may be occupied for longer periods, either pre bushfire attack or post bushfire attack, in an unsealed state i.e. with doors or vents open (refer to 3.2.2).
Ceiling height	Minimum 1.9 m.	Impacts the relationship between occupancy time and the number of occupants.
Floor area	Minimum 0.75 m 2 per person.	Nil.
Volume	Minimum 1.2 m 3 per person	Minimum ‘volume’ criterion is intended to provide sufficient air for a maximum duration of 60 minutes. Design durations greater than 60 minutes will require a specific assessment of air supply.
Interior air temperature OR Interior mean Modified discomfort index (MDI) for 60 minutes	Maximum 45°C (Patterson et al. 2010). Maximum mean 39°C (Patterson et al. 2010).	A tenable environment within a shelter can be detrimentally affected by increased air temperature and relative humidity (refer to 3.4.4).
Interior surfaces temperature	Maximum 70°C for unguarded surfaces.	Interior surface temperatures can be estimated by exposure to design fire conditions. Typical surfaces are those which an occupant of a shelter would be able to touch. Appropriate guarding or insulating of materials is acceptable. Internal surface temperatures will influence interior air temperatures

PROVISION OF TENABLE CONDITIONS WITHIN A SHELTER (continued)		
Interior air toxicity	Construction materials forming part of the interior of a shelter that are likely to give off gas at temperatures exceeding 100°C must be tested to BS 6853 (1999) Appendix B2. Gases must be limited to – (a) carbon monoxide 30 ppm; (b) hydrogen chloride 1.0 ppm; (c) hydrogen bromide 0.5 ppm; (d) hydrogen fluoride 0.5 ppm; (e) hydrogen cyanide 1.0 ppm; (f) nitrogen dioxide 0.5 ppm; and (g) sulphur dioxide 2.5 ppm.	Materials used for construction of a shelter must not unduly influence the tenable environment during occupation.
Smoke sealing	Maximum leakage rate of 0.3 air changes per hour (when measured at an overpressure of 50 Pa), with ventilation system closed or not operating.	Shelters must minimise ingress of potentially untenable external air.
Ventilation	Natural ventilation must be provided by openings such as doors or other devices that, when open, have an aggregate open area of not less than 5% of the floor area of the shelter.	Sealed shelters may require ventilation to ensure a tenable environment is provided prior to occupation. Ventilation may also be used to supplement air supply provided external conditions are suitable.
EXTERNAL ENVELOPE		
Construction materials	Concrete or solid masonry construction with FRL 60/60/60, except for viewing windows.	Evaluation of external envelope is to include elements and construction joints.
Structural design	The structural design of the shelter must be in accordance with Section B of Volume One of the BCA. All loads and actions to which a private bushfire shelter may reasonably be subjected must be considered, as necessary, for a building having an Importance Level of 4 as per Table B1.2a of Volume One of the BCA.	The external envelope is to be designed relevant to its above or below ground construction, including – (a) topography of the site; (b) dead loads; (c) live loads; (d) impact loads (e.g. falling trees); (e) wind loads; and (f) imposed loads (e.g. vehicles).
ACCESS DOORS OR HATCHES		
Size of opening	Unobstructed minimum width of 600mm and unobstructed minimum area of 0.36m^2.	Access to a shelter is to be provided by a door or hatch opening that is of sufficient size to allow prompt access.

ACCESS DOORS OR HATCHES (continued)		
Construction materials	(a) Except for seals to doors or hatches, must be non-combustible (b) When tested to the method described in AS 1530.8.2 shall comply with clause 13.8, except that – I. openings are not permitted; II. flaming is not permitted; III. radiant heat flux is limited to less than 2.5 kW/m^2 at 365mm; and IV. temperature rises must be appropriate to meet other criteria in this Table. (c) When tested to the method described in AS 1530.8.2, operable parts of a shelter such as door, sealable vents and operable ports, must fully operate at the conclusion of the test.	Access door materials need to maintain the design integrity of the shelter. When subjected to a design fire, access door materials, including insulation and door seals, must not release significant amounts of smoke or toxic fumes into the shelter.
Operation of access door	(a) Must be able to be latched in both the open and closed positions (b) Must be able to be unlocked from inside when locked from outside (c) The temperature of operational components such as door handles, latches or locks must not exceed 55°C when measured 30 minutes after exposure testing to AS 1530.8.2 test.	An access door is a critical component of a shelter. It is required to maintain integrity for occupant protection through fire exposure. It is essential that it is able to operate as intended following exposure to a bushfire event. It is likely that an access door will be heavier than a solid core door. Therefore, the possibility of crush injuries needs to be minimised by providing latches.
Access ladders	Ladders used to provide access to or egress from a shelter must comply with AS 1657.	For subterranean shelters it is expected that access may be through some form of ladder or steps.
SIGNAGE		
External signage	(a) A permanent sign made from durable materials must be fixed adjacent to the main access roadway on the allotment on which a shelter is located (b) The sign shall be headed “PRIVATE BUSHFIRE SHELTER” in red letters on a white background in letters at least 100 mm high. The sign must include the following information in red letters at least 25 mm high – I. the distance to the shelter on the allotment; and II. the general direction in which the shelter is located (using words or a directional arrow).	

SIGNAGE (continued)		
Internal signage	(a) A permanent sign made from durable materials must be fixed inside a shelter adjacent to the main access door/hatch (b) The sign shall be headed "PRIVATE BUSHFIRE SHELTER" in red letters at least 25 mm high on a white background. (c) The sign must include the following information in letters at least 5 mm high – I. the designed number of occupants; II. the designed duration of occupation; III. instructions for occupant access and egress; IV. instructions for the operation of installed equipment; V. information for contacting emergency services; VI. advice that increasing the designed number of occupants will decrease the maximum designed duration of occupation; and VII. information regarding the potential to open vents when external conditions are suitable.	
CAPACITY TO ASSESS EXTERNAL CONDITIONS		
Viewing window	(a) Minimum size of 0.01 m^2 (b) Maximum size of 150 mm x 150 mm Minimum FRL -/60/60 and glazing must remain clear after testing	Prior to leaving a shelter occupants will need to visually assess external conditions and a viewing window or port is an appropriate mechanism.
MAINTENANCE		
Maintenance manual	A maintenance manual must be located within a shelter and provide information relating to – I. general maintenance requirements; II. a maintenance schedule; III. special requirements to return a shelter to service following fire exposure to a bushfire event; and IV. any consumable items.	It is likely that a shelter may not be occupied for several years after it is constructed. Shelters will require regular maintenance to ensure effective operation.

FURTHER INFORMATION

Building Committee information, including functions and roles

- Sub-committee of the State Planning Commission
- http://www.saplanningcommission.sa.gov.au/building_committee

South Australian Legislation

- *Development Act 1993*
- Development Regulations 2008
- *Planning, Development and Infrastructure Act 2016*
- http://www.legislation.sa.gov.au/

Australian Building Codes Board information and publications

- CodeMark and the accreditation of building products
- Performance Standard for Private Bushfire Shelters
- http://www.abcb.gov.au/

Country Fire Service information and publications

- Bushfire Survival Plan guidance and template
- http://www.cfs.sa.gov.au/

Further information

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