

Performance Solution designs

Fact Sheet; Wye River & Separation Creek

Building in multiple Bushfire Attack Levels, September 2016

Background

A number of properties in Wye River and Separation Creek are affected by more than one Bushfire Attack Level (BAL). For many properties, this includes both Flame Zone (FZ) and BAL 40. The Building Code of Australia requires that structures that are affected by more than one BAL should be designed and built in accordance with the higher assessment that applies.

Assessment of properties in Wye River and Separation Creek

The Wye River and Separation Creek BAL assessments have been undertaken and now apply as an incorporated document to the Schedule in Clause 52.03 and the Schedule to Clause 81.01 of the Colac-Otway Planning Scheme.

As a result of the assessments, a number of lots have been identified as having different BAL assessments applying to different areas on the allotment.

For those who are rebuilding, there will be instances where the bulk of their proposed house is located in a BAL 40 (or lower) area, but one part of the structure – such as the deck – falls into the FZ area.

There is flexibility within the Building Code of Australia to allow appropriate building solutions, known as **Performance Solutions**, to deal with these circumstances.

Pathways to bushfire construction compliance – P2.3.4 Bushfire areas

The Building Code of Australia (also known as the National Construction Code) is a performance-based document. The performance requirement for construction of buildings in bushfire-prone areas is **P2.3.4**.

P2.3.4 Bushfire areas

A Class 1 building (dwellings) or a Class 10a building (such as a garage or a shed) or a deck associated with a Class 1 building that is constructed in a *designated bushfire-prone area* must, to the degree necessary, be designed and constructed to reduce the risk of ignition from a bushfire, appropriate to the (a) potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire; and (b) intensity of the bushfire attack on the building.

Deemed-to-Satisfy solution

The Deemed-to-Satisfy solution for construction of buildings in bushfire prone areas is construction to the relevant BAL using prescriptive construction solutions from AS3959-2009-*Construction of building in bushfire prone areas*, or the NASH *Standard-Steel Framed Construction in Bushfire Areas 2014*. It requires a BAL assessment to be undertaken as has occurred and now set out in the Planning Scheme. If that assessment determines that there are different BALs applying to the proposed building (i.e. the assessed BAL from the north may be higher than the assessed BAL from the south) then the construction standard applied under the Deemed-to-Satisfy solution is to be the worst case BAL arising from that assessment. This means that where the footprint or site of a proposed new building is superimposed over differing BALs on the allotment then Deemed-to-Satisfy construction must be to the highest BAL applying to the proposed building footprint.

What is a Performance Solution?

A Performance Solution is a compliance solution that allows for designs to be developed that may not necessarily comply with the two bushfire construction standards (mentioned above) but still demonstrates

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compliance with **P2.3.4**. A Performance Solution can be much more nuanced to the actual conditions rather than the blanket prescriptive Deemed-to-Satisfy requirements. For instance, BAL 40 means that it is likely that a proposed building will be subject to some intermittent flame contact and the anticipated radiant heat from the fire front is 40kW or less (but over 29kW).

Once over 40kW of radiant heat is anticipated, the BAL outcome is automatically tipped into FZ. However, the anticipated radiant heat exposure may only just exceed 40kW. The Deemed-to-Satisfy Solution is designed to accommodate radiant heat exposure to any level above 40kW so may be 'overkill' in situations where the anticipated radiant heat is only slightly above the 40kW threshold. Using a Performance Solution can nuance the design to the actual exposure conditions that are calculated.

A Performance Solution must comply with the Performance Requirement or at least be equivalent to the Deemed-to-Satisfy Solution. A Performance Solution must also use one of the assessment methods set out in the Building Code as below.

1.0.5 Assessment Methods

The following *Assessment Methods*, or any combination of them, can be used to determine that a *Performance Solution* or a *Deemed-to-Satisfy Solution* complies with the *Performance Requirements*, as appropriate:

- Evidence to support that the use of a material or product, form of construction or design meets a *Performance Requirement* or a *Deemed-to-Satisfy Provision* as described in **1.2.2**
- *Verification Methods* such as –
 - the *Verification Methods* in the NCC; or
 - such other *Verification Methods* as the *appropriate authority* accepts for determining compliance with the *Performance Requirements*
- *Expert Judgement*
- Comparison with the *Deemed-to-Satisfy Provisions*.

And evidence to support that the design meets a Performance Solution is as follows:

1.2.2 Evidence of suitability

(i) A report issued by a *Registered Testing Authority*, showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information that demonstrates its suitability for use in the building.

- A current *Certificate of Conformity* or a current *Certificate of Accreditation*
- A certificate from a *professional engineer* or other appropriately qualified person which –
 - Certifies that a material, design or form of construction complies with the requirements of the *Housing Provisions*; and
 - Sets out the basis on which it is given and the extent to which relevant specifications, rules, codes and practice or other publications have been relied upon.
- A current certificate issued by a product certification body that has been accredited by the Joint Accreditation Scheme of Australia and New Zealand (JAS-ANZ).
- Any other form of documentary evidence that correctly describes the properties and performance of the material or form of construction and adequately demonstrates its suitability for use in the building.

Proposing a Performance Solution

As can be seen, a Performance Solution may appear complex to the lay-person but can have the advantage of developing a design solution to accommodate the anticipated impact of a bushfire but fine-tuned to a more nuanced level that can be achieved under the Deemed-to-Satisfy Solution.

It is clear that the engagement of a suitable professional would be required to assist in the



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development of a Performance Solution. In Victoria this person would be a registered fire safety engineer with experience in bushfire matters. Building designers working for a property owner would be reasonably expected to recommend engagement of a registered fire safety engineer, where appropriate, as part of the design process for a new or replacement dwelling including where a structure is in more than one BAL designation.

Performance Solutions building permit approvals

The building surveyor you appoint to issue your building permit is known as the relevant building surveyor (RBS). It is anticipated that many RBS will be comfortable with assessing and approving a Deemed-to-Satisfy design but less so with a Performance Solution. This is because most building surveyors have never had any specific training in bushfire behaviour, fuel loads presented by differing types of vegetation and the anticipated radiant heat levels, flame length or ember generation caused by differing vegetation.

Certificates of Compliance

To ensure you have a smooth process for approval of a Performance Solution design, you should consider asking the fire safety engineer to provide you with a Certificate of Compliance-Design or engaging an independent fire safety engineer (one who did not contribute to the design) to issue a Certificate of Compliance-Design. The Building Act, under section 238 provides a specific procedure that the RBS can accept in good faith. If presented with a Certificate of Compliance-Design from a component, independent fire safety engineer, the RBS can issue the permit without further interrogation and/or analysis of the Performance Solution.

Building Appeals Board

The Building Appeals Board (BAB) is an independent statutory body that can 'modify' building regulations,

hear and determine disputes, and determine that a Performance Solution complies with the relevant performance requirement. An alternative to obtaining a Certificate of Compliance from an independent fire safety engineer is to make an application under section 160A of the Building Act 1993 that a particular design of a building complies with the regulations. Essentially, the BAB will conduct a peer review of the Performance Solution design and make a determination as to its compliance with performance requirement **P2.3.4**. If a determination is made by the BAB that a design meets performance requirement **P2.3.4**, the RBS will accept this without further interrogation and/or analysis of the Performance Solution.

The Building Appeals Board can be contacted at 1300 421 082 or bab@vba.vic.gov.au

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