

EXTRACT FROM RECORD OF BCC 2017-3**Item 3 CONSIDERATION OF NCC 2016 AMENDMENT 1 PUBLIC COMMENT**

[19 and 20 October]

Item Introduced by s22

Recommendation

It is recommended that members support a final publication draft with regard to public comment received on the draft NCC 2016 Volume One Amendment 1 for endorsement by the Board at its 2017-3 meeting in November.

Outcome

Comments were discussed and resolved based on the recommendations set out in the Summary Document (Attachment 3.0), as follows:

A1.1 and C1.14 – Ancillary element

ABCB Office recommendation supported.

CV3 – General stringency

ABCB Office recommendation supported.

CV3(a) – Applicability of building to building fire spread

ABCB Office recommendation supported.

CV3(b) – 2kg debris requirement

ABCB Office recommendation supported.

BPIC to provide draft wording clarifying the application of the requirement to windows for possible inclusion in guidance material.

CV3(b)(i) – External Wall test

ABCB Office recommendation supported.

CV3(c) – Cavities

ABCB Office recommendation supported.

CV3(c) – Cavity barriers

CV3(c) to be revised to remove prescriptive specification for cavity barriers, to be replaced with a requirement that where cavities exist, cavity barriers must be provided and must form part of the tested wall system.

CV3(d)(i) – Sprinkler coverage for large, uncovered balconies

ABCB Office recommendation supported, subject to inclusion of reference to patios and terraces in addition to balconies.

CV3(d)(ii)(B) – Twice design area clarification

ABCB Office recommendation supported subject to additional revised wording to clarify intent.

CV3(d)(ii)(B) – Twice design area requirement

ABCB Office recommendation supported.

C1.1(b) – And the provisions of this part

ABCB Office recommendation supported.

C1.9(d) – Sarking

ABCB Office recommendation supported.

C1.9(d)(ii) – Membrane

Members agreed to remove the word 'membrane'.

C1.9(e)(vi) – Bonded laminated materials

Members agreed to proceed per the Committee Draft, on the basis that the ABCB Office make enquiries with the UK authorities to ascertain their approach to the issue of the potential combustibility of glue used in bonded laminated materials, with that advice to be considered at a future BCC meeting.

C1.9 – Exemptions to non-combustibility requirements

ABCB Office recommendation supported.

C1.10 – Fire hazard properties

ABCB Office recommendation supported.

C1.14 – Ancillary elements: wiring

ABCB Office recommendation supported, subject to including the word 'installed'.

C1.14 – Ancillary elements: grates and grilles

ABCB Office recommendation supported.

C1.14 – Ancillary elements: signs

ABCB Office recommendation supported.

C1.14 – Ancillary elements: clarifying application

ABCB Office recommendation supported.

C1.14 and Clause 2.4 of Specification C1.1 – Installations not to reduce fire-resistance

ABCB Office recommendation supported, on the basis of the revised wording distributed to members on 20 October, and including a limitation to the effect that combustible awnings and sunshades would be permissible only on the ground and first storeys of a building.

Specification C1.1. Clause 2.4 – title

ABCB Office recommendation supported.

Specification C1.1. Clause 2.4 – Removal of subjectivity

ABCB Office recommendation supported.

Following discussion of the Summary Document, the following comments (see Attachment 3.1) were discussed:

Specification C1.1 – Table 3: inclusion of balustrades

Members agreed that guidance should be provided to clarify that Table 3 does not apply to balustrades.

Inclusion of 'render' in C1.14(k)

Following discussion of the items above, a concern was raised that 'render' should not be included in C1.14(k) because some types of render could be combustible. Members agreed to remove 'render' from C1.14(k).

Actions arising

- (1) Committee draft of NCC 2016 Amendment 1 to proceed to the Board for sign-off, including any agreed changes to the draft as listed under the Outcome for this item.
- (2) ABCB Office to report back to a future BCC meeting on any advice received from UK authorities regarding their approach to the issue of the potential combustibility of glue used in bonded laminated materials.

BCC 2018-2 Draft Record

Item 5 CONSIDERATION OF PUBLIC COMMENT ON NCC 2019

Item introduced by the Chair.

Consult Australia advised the BCC that industry representatives had met prior to the meeting and agreed to limit the number of comments they would raise for discussion on the proviso that they may revisit certain subjects for discussion at a future date (i.e. 'without prejudice'). This was acknowledged by the Chair and the BCC.

5.3 Bonded laminate materials (Vols. One and Two)***Recommendation***

It is recommended that members consider and agree to a position on key issue 5.3.1 arising from public comment as set out in this 'key issues paper'.

Outcome

Refer below for outcome of each key issue.

5.3.1 *Concession for bonded laminate materials*

Members discussed the bonded laminate concession but were unable to reach a consensus on the ABCB Office recommendation, which was to remove the concession. However, a narrow majority of members who voted supported removal of C1.9(e)(vi) subject to inclusion of a concession for sarking-type material with maximum specified thickness and fire performance as part of C1.9(d). Removal of the bonded laminate concession was opposed by [s22](#)

It was agreed that the Board be informed of the views of the BCC including implications for removal of the concession and the option of providing a transition period for its enactment beyond 1 May 2019.

Actions arising

- (1) Removal of bonded laminate concession to be referred to the Board, including the possibility of a transition period for its enactment beyond 1 May 2019.
- (2) Concession for sarking-type materials to be included in C1.9(d).

BCC 2018-3 Draft Record

Item 3 BCC ENDORSEMENT OF COMMITTEE DRAFT 2 FOR NCC 2019

Item introduced by the Chair and *s22*

Recommendation

It is recommended that members—

1. note the amendments made to Committee Draft 1 following BCC 2018-2; and
2. endorse Committee Draft 2 for Volumes One and Two of NCC 2019, for consideration by the Board at its 2018-3 meeting.

Outcome

Recommendation 1 — noted.

Recommendation 2 — Committee Draft 2 was endorsed for consideration by the Board, subject to changes agreed at the meeting and resolution of several of issues out-of-session.

The following changes to Committee Draft 2 were agreed by members:

- C1.9(d): Insert “glass, including laminated glass” into C1.9(d).
- C1.9(e)(vi): Change thickness of sarking type materials to 1 mm thick rather than 500 micron width.

BCC 2019-3 Draft Record

**Item 3 CONSIDERATION OF PUBLIC COMMENT ON NCC 2019
 AMENDMENT 1**

Item introduced by s22 with the Chair noting the expanded content of the Amendment arising from the Board's desire to implement a couple of immediate actions from the BCR National Framework adopted by the BMF.

2 – Marking specifications for ACPs**2.1**

s22 representative requested clarification that the requirement to mark ACPs applied regardless of the end use of the product. Members were advised that the scope of application was set by the Senior Officials' Group and that, at the time of manufacture, the end use of the product cannot be guaranteed. Therefore all products covered by the Technical Specification must be marked.

Outcome: No change to draft.

2.2

s22 representative requested that a definition of ACP be included in the NCC rather than a reference to the definition in the Technical Specification.

It was agreed that the scope of what types of ACP's will require labelling to be included in the Guide to Volume One for commentary.

Outcome: Repeat in the NCC the definition of ACP from the Technical Specification.

Include the scope of what types of ACP's will require labelling, in the Guide to Volume One, for commentary

Review of external wall fire safety provisions Stage One

Consolidated comments on Scoping Paper

Table of Contents

Summary of responses..... 7
General or holistic responses..... 10
s22

1. Adhesives and adhesives tapes 12
s22

2. Backer rods 14
s22

s22

s22

5. Thermal breaks between structural members and cladding systems..... 17

s22

s22

10. Joint trim mouldings and joint reinforcing tape 21
s22

11. Weather sealing materials used within and between concrete tilt panels 22
s22

12. Elements supporting reinforcing bars that are encased in concrete..... 23
s22

13. Articulation joints associated with brick work..... 23
s22

14. Brick ties and other (acoustic ties) 24
s22

15. Texture finish coating, primer or similar finish or coating..... 25

s22

16. Render systems26

s22

s22

**19. Clarification on treatment of concrete, masonry, structural steel and other similarly
inherent non-combustible materials29**

s22

s22

21. Mechanical fixing of bonded laminate material for Type A and B construction 30

s22

22. Other items not yet considered in the scoping paper 32

s22

Summary of responses

s22	1. Adhesives and adhesive tapes	2. Backer rods	5. Thermal breaks between structural members and cladding systems
s22	Support ABCB	Support ABCB	Support in line with UK Regulations
	Support in line with NZ approach	Support in principle	Support in principle
	Support	Support	Support
	Support in principle	Not support	No position. Provided comment
	Support in principle	Support in principle	Not support
	Support in principle	Support in principle	Support in principle
	Support ABCB	Support in principle	Support in principle
	Support ABCB	Support ABCB	Support ABCB

s22 also provided holistic comments

s22	10. Joint trim mouldings and joint reinforcing tape	11. Weather sealing materials used within and between concrete tilt panels	12. Elements supporting reinforcing bars that are encased in concrete	13. Articulation joints associated with brick work	14. Brick ties and other ties (acoustic)	15. Texture finish coating, primer or similar finish or coating	16. Render systems	s22
s22	Support ABCB, unlikely to require controls	Support ABCB	Support ABCB	Support ABCB, unlikely to require controls	Support ABCB, unlikely to require controls	Support ABCB	Support in principle	
	Support in principle	Support ABCB	Support ABCB	Support ABCB	Support ABCB	Support ABCB	Support ABCB	
	Support	Support	Support	Support	Support	Support	Support	
	No comment	No comment	Support ABCB	No comment	Support in principle	Support in principle	No position. See comment below	
	Support in principle	Support in principle	Support ABCB	Support in principle	Support ABCB	Support in principle	Support in principle	
	Support in principle	Support in principle	Support in principle	Support in principle	Support in principle	Support in principle	Support in principle	
	Support in principle	Support in principle	No position or comment	Support in principle	Support in principle	Support in principle	Support in principle	
	Support ABCB	Support ABCB	Support ABCB	Support ABCB	Support ABCB	Support ABCB with comments	Support ABCB	

s22 also provided holistic comments

s22	19. Clarification on treatment of concrete, masonry, structural steel and other similar inherent non-combustible materials	s22	2.1. Mechanical fixing of bonded laminate material for Type A and B construction
s22	Support ABCB Support ABCB Support in principle Support Support in principle Support ABCB Support in principle Support ABCB No position or comment Support ABCB with comments		Support in principle Support ABCB — Support — No comment Support in principle Provided comment No position or comment Support in principle
s22	also provided holistic comments		

General or holistic responses

s22

Supports the scope indicated and look forward to outcomes for better buildings.

s22

External wall assemblies can be complex systems that need to be considered holistically (i.e. as a system) in terms of their fire performance. Research and testing have shown that even what may be considered relatively minor aspects of a wall design can have a dramatic effect on the overall fire performance of the wall assembly, when tested as a system. Therefore all aspects of a wall assembly can be potentially important in terms of its fire performance, including many of the materials/products proposed in the paper for inclusion in the NCC 2022 as Deemed-to-Satisfy (DTS) features of an otherwise non-combustible external wall. Therefore, it is conceivable that the inclusion of these combustible materials could have a significantly detrimental effect on the performance of an otherwise non-combustible wall, either in themselves or acting in combination with other permitted combustible materials.

s22 notes that there has been no scientific or engineering evidence provided to support the proposed inclusion of these materials/products in the DTS provisions of the NCC 2022. s22 considers that certainty of fire performance of the wall assembly is essential before consideration be given to inclusion of these materials in the DTS provisions. There is currently no strong evidence provided that would give some certainty of adequate fire performance. Consequently s22 considers that these combustible materials/products should not be included in the DTS provisions at this point in time.

In conclusion, it is the opinion of s22 that the proposed inclusion of additional combustible materials into the DTS provisions of the NCC should be based on strong scientific/engineering evidence of satisfactory fire performance of a wall assembly system that incorporates these materials/products. In other words, there needs to be strong technical evidence that their inclusion in a wall assembly/system would not contribute to or cause inadequate fire performance of the wall assembly/system.

In the absence of the aforementioned evidence, s22 does not currently support the inclusion of additional combustible elements into the DTS provisions of the NCC 2022.

s22 does support the inclusion of clarification around materials that are inherently non-combustible, such as those identified in Item 19 of the paper.

It is s22 recommendation that the suitability of the various combustible materials/products be examined in detail as part of the Stage 2 research and analysis work.

s22

In arriving at these views we also sought the views of s22

We understand the intention behind the proposal is to provide greater certainty for industry on the use of products and clarify the operation of the NCC. While some are clearly not likely to be an issue, e.g. bricks, brick ties, concrete and glass, others could potentially play a role both individually and more likely as a whole in potential for fire generation and spread, e.g. as part of a wall assembly.

Additionally, by including all these items / issues as Deemed to Satisfy, this could diminish the role of experts, such as Fire Engineers, in the assessing the impact of all these issues / products when combined. Extensive work has been already been completed on developing further training courses for Fire Engineers and developing material data bases for this purpose.

We believe that there needs to be a sound basis for change. The support presented in some of the Proposals for Change is not so and could be described as anecdotal. Some justification appears to miss the issue (in the case of item 7) or appears to be based on precedent.

Finally, we consider that care should also be taken where Deemed to Satisfy provisions include concepts like 'undue risk of fire spread' which are, in practicality, signalling that another evidence of suitability pathway is necessary which involves assessment by a competent professional. This was identified as a factor which contributed to the use and prevalence of non-conforming combustible cladding being used on existing buildings.

We consider that all these matters should be combined within a single stage which considers in depth the research and analysis of these matters in a holistic manner rather than rushing to include them in the NCC 2022 public comment draft.

s22

The structure and approach of the review of the items listed below is not based on a wholistic framework. Each of the 22 elements is considered mostly in isolation. s22 suggest that a framework is applied to the raft of issues as part of the Stage 2 parallel technical investigation. Some suggestions for the framework are included in the section 22 *Other items*. Some material is included in the 21 items below however the most significant content is in section 22 and reading that section first may be of benefit.

s22

The paper proposes to introduce a number of concessions in terms of the combustibility of certain components of an external wall. While each individual concession may only have a minor impact, consideration needs to be given to cumulative impact of the proposed concessions on the overall fire performance and combustibility of an external wall.

It is recommended that consideration be given to the 'flammability' of the materials for which concessions are being provided and whether it may be appropriate for certain materials to be required to satisfy a particular Flammability Index, Spread-of Flame Index or the like.

It is also recommended that qualitative phrases such as 'no larger than necessary', 'minor' and the like are not contained within any proposed Deemed-to-Satisfy (DtS) provisions, as such phrases are open to interpretation.

s22

AIBS notes the suggested scope of amendments for NCC 2022 and is generally supportive of the approach in that it will improve upon the current provisions and address many issues faced by the building surveying profession and industry. We note that there is a potential alternative pathway which we believe should also be considered in parallel to consideration of the AIBS scoping paper.

The alternative approach is that the lists contained in C1.9 and C1.14 are re-built so that rather than reliance on a listed item to determine if something can or cannot be included in or on an external wall, reference can be made to a threshold benchmark that can be defined by testing or similar.

We also note that there is a possibility that these provisions and others should in fact be re shaped into a Specification and that there may be further options which could improve this part of technical regulation also.

I have taken the time to explain the alternative concept a little more, and it is provided on the basis that there exists a way of defining limited combustibility.

Currently, C1.9(d) lists things that the non-combustibility requirement doesn't apply to (which is not at all limited regarding area of façade, or how combustible the item is, etc.) which could be converted to an exemption criteria such as:

Elements, that are not made of permitted materials being:

- masonry,
- concrete,
- non-laminated glass,
- structural metal (steel or aluminium or other metal alloy materials for which there is an ACM referenced in Part B or Part 3.4)

which are to be incorporated into construction required to be non-combustible, may be used irrespective of their combustibility if, in aggregate, they comprise less than XX% by volume of the rated construction element.

Also, C1.9(e) lists combustible items that are permitted to be used where non-combustible materials are required (which is also not limited beyond what can be interpreted from the description of each item) which also could be converted to a concession criteria such as:

Elements incorporated into construction required to be non-combustible may be used if they are of *limited combustibility level 1* in any building or *limited combustibility level 2* in buildings up to 25m high.

This would require two new definitions, which could relate to tests used in the UK or other parts of the world as may be appropriate in the Australian technical setting.

C1.14 exempts attached items from the non-combustibility requirement (to the extent that is limited by interpretations of the meaning of the listed items) and could be converted into a concession clause in a similar way as follows:

C1.14 (a) (retained); (b) elements with *limited combustibility level 1* in buildings to 50m high; (c) elements with *limited combustibility level 2* in buildings to 25m high; (d) elements with combustibility exceeding level 2 shall not be permitted.

1. Adhesives and adhesives tapes

ABCB proposed solution

For sarking associated adhesives:

As qualifiers for sarking-type materials has already been provided in C1.9(e)(vi), it is proposed to expand C1.9(e)(vi) to include sarking associated adhesives, whilst keeping the qualifiers within the sub-clause.

C1.9(e)(vi) *Sarking-type materials and adhesives associated with sarking*, that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.

For glazing associated adhesive:

Amend C1.9(d)(v), to permit associated adhesive.
 C1.9(d)(v) Glass, including laminated glass and associated adhesive not exceeding XX mm thickness.
Other alternative approaches:
 To permit adhesive and adhesive tapes provided it **does not comprise of >5% of wall area**. This is the approach New Zealand provides in their guidance document, *Fire performance of external wall cladding systems*.
 This could be further investigated in Stage Two of the project.

Members' recommendation

1.1 s22

Support ABCB comment on limits/controls in including this in NCC

1.2 s22

Support a similar approach to NZ (e.g. percentage limitation) is preferable to permit reasonable use and prevent misuse of adhesives.

1.3 s22

Support in principle to permit as required for glazing to meet C1.9(e)(vi).

Comment:

The proposed <5% of the building face leads to a disjoint between buildings of different sizes. %5 of Eureka tower all placed in one location is a very large area extent which would be 100% of a 4 storey 12 SOU apartment. Limitations on vertical and horizontal extent may more equitable.

Where there is a vertical joint in the membrane that may extend the full height of the building and crosses a cavity barrier does the clause allow 1mm membrane + 1mm adhesive + 1 mm membrane = 3mm combustible material? Does this combination of 3 layers need to comply with the flammability index requirement?

The exemption for moisture control membranes and adhesive could look to test methods such as FM Approvals Standard for Cavity Walls and Rainscreens, Class Number [4411](#)

1.4 s22

Support in principle to ABCB recommendation

Comment: However, it is questioned if the term 'adhesive' adequately captures the products referred to in the paper, as the paper identifies various types of 'tapes' which may not be considered as 'adhesives'.

1.5 s22

Support in principle for limited by % volume of wall materials.

1.6 s22

Support ABCB recommendation.

Comment: It is important to offer a DtS solution to standard construction methods – MBA is supportive of the approach as long as the provisions are clearly stated.

1.7 s22

Support ABCB recommendation.

2. Backer rods

ABCB proposed solution

Add new sub-subclause to C1.9(d)

C1.9(d)(viii) Backer rods no larger than necessary for the purpose of weatherproofing.

Members' recommendation

2.1 s22

Support ABCB comment on limits/controls in including this in NCC

2.2 s22

Require limited combustibility or non-combustible backing rods where they span more than one fire compartment (or sole occupancy unit separated by fire-rated construction) unless forming part of an EW rated, tested system to AS5113.

Comment: It is apparent that limited combustibility and non-combustible backer rods exist, but this technology is unlikely to propagate without incentive. The potential contribution to fire spread for larger rods is also unknown.

Although the individual contribution to fire from smaller backer rods is likely to be low, taken cumulatively as part of a system (including other proposed concessions) and without knowledge from fire testing, the potential influence for fire spread is unknown, particularly for larger (e.g. 50mm) products.

2.3 s22

Support in principle to permit with a flammability index not greater than XX to remove some poor materials.

Comment:

Backer rods can run the full extent vertically of a wall crossing cavity barriers. At 50mm wide that forms substantial extent of material facing the cavity. Some controls on flammability are required.

2.4 s22

Support in principle. Concerns are raised in relation to the reference to backer rods being 'no larger than necessary', as this is qualitative and open to interpretation.

It is recommended that consideration be given to restricting the size of backer rods (e.g. identifying a maximum size or cross sectional area) or the total surface area of an external wall that backer rods can form (XX% of the surface area of the wall)?

The paper indicates that backer rods come in various sizes ranging from 6mm to 50mm and are commonly made of polyethylene foam or polyurethane foam. Therefore, the size of the backer rod used would have a significant impact on the total surface area of the external wall that consists of backer rod, e.g. if 6mm backer rods were used the external wall would consist of more 'cladding material' than compared to if a 50mm backer rod were used.

Comment: Noting the fire safety issues with the use of polyethylene or polyurethane materials it is questioned if providing concessions for these materials is appropriate. Consideration needs to be given to restricting the types of materials that can be used for backer rods.

2.5 s22

Support in principle for limited by % volume of wall materials.

2.6 s22

Support in principle, the drafting is not clear enough to provide certainty for industry and I imagine it would be difficult to regulate.

Comment: As the purpose of the backer rod is to provide a backing for a flexible sealant/caulking, can this provide a protection to the BR? Does this need to part of the requirements regarding backer rods? This may prevent people from sealing gaps with “backer rod” only.

2.7 s22

Support ABCB recommendation.

s22

s22

s22

5. Thermal breaks between structural members and cladding systems

ABCBC proposed solution

Add new subclause C1.9 (d)(vi) (renumber other existing subclauses)

Thermal breaks associated with framing systems where—

(A) the thermal break material is shielded from free air; and

(B) are not larger than necessary for the purpose; and

(C) do not comprise a continuous sheet over the whole façade area; and

(D) the Spread-of-Flame Index and the Smoke-Developed Index of the thermal break material as a whole do not exceed 0 and 3 respectively.

Members' recommendation

5.1 s22

Limitation and scope of application in line with what is prescribed in UK Regs referred to would be sensible and appropriate.

5.2 s22

Support subject to amending (C) to prevent continuous sheet spanning more than one fire compartment or SOUs separated by fire-rated bounding construction.

5.2 s22

Comment: Limit of extent should be more specific.

Recent investigation into the Grenfell tower showed failure of windows thermal breaks elements lead to faster than expected smoke and fire spread into the SOU. Heat conduction through the metal window frame heated the thermoplastic thermal break elements and distorted the frames leading to glazing displacing and falling (Structures in fire conference, Brisbane, 2020 E Guillaume et al.)

Based on the suggest that consideration of and/or additional clause may be needed to ensure that the thermal breaks are not integral to the function of the associated elements. The failure of the elements is due to thermoplastic behaviour of the element hence potentially C1.9 is not the correct clause but non-combustibility correlates to thermoplastic behaviour.

This mode of failure may also be relevant to tape fixing of glazing and other items.

5.4 s22

Not supported.

It is questioned whether such an exemption is required if as the paper indicates there are at least three thermal break products already on or coming into the market that are non-combustible.

5.5 s22

Support in principle for limited by % volume of wall materials.

5.6 s22

Support in principle, the drafting is not clear enough to provide certainty for industry.

Comment:

-Is this clause addressing structural framing? Framing material? Timber, steel, reinforced concrete?

5.7 s22

Support ABCB recommendation.

s22

s22

s22

9. Acoustic mounts

ABCB proposed solution

Add new subclause to C1.9(d) and C1.14

An acoustic mount,

-no larger than necessary for the purpose; and

-not continuous over the extent of the external wall.

Members' recommendation

9.1 s22

Support ABCB comment on limits/controls in including this in NCC

9.2 s22

Support ABCB recommendation without further comment.

9.3 s22

No position or comment provided.

9.4 s22

Support in principle.

Concerns are raised in relation to the reference to acoustic mounts being 'no larger than necessary' as this is qualitative and open to interpretation.

It is recommended that consideration be given to identify a maximum size for acoustic mounts.

9.5 s22

Support in principle for limited by % volume of wall materials.

9.6 s22

Support in principle. Would like to see clearly defined parameters as opposed to 'no larger than necessary for the purpose'.

9.7 s22

Support ABCB recommendation.

10. Joint trim mouldings and joint reinforcing tape**ABCB proposed solution**

Add sub-subclause to C1.9(d)

-Minor joint trims and joint reinforcing tape, not larger than necessary for the purpose.

Members' recommendation**10.1 s22**

Joint trim mouldings and joint reinforcing tape are generally well understood and have defined products and uses and would unlikely need additional controls over – i.e. H-moulds, corner moulds, joint fiberglass tape. Timber mouldings slightly different to a timber joint strap so may need to expand out explanation on this and to ensure timber trims is not misapplied for sections of façade using feature timbers.

10.2 s22

Support to restrict exemptions on a case by case basis to areas where mouldings are not considered to present a hazard to occupants below, including firefighters.

Comment: The mass is unquantified and larger debris could result in a hazard to occupants below during different stages of fire.

10.3 s22

No position or comment provided

10.4 s22

Support in principle

Concerns are raised in relation to the use of the term 'minor' and the reference to joint trims and reinforcing tape being 'not larger than necessary' as this is qualitative and open to interpretation.

It is recommended that consideration should be given to identifying a maximum size of joint trims and reinforcing tape or a total surface area of an external wall that such materials can form (XX% of the surface area of the wall).

10.5 s22

Support in principle for limited by % volume of wall materials.

10.6 s22

Support in principle. Would like to see clearly defined parameters as opposed to 'no larger than necessary for the purpose'.

10.7 s22

Support ABCB recommendation.

11. Weather sealing materials used within and between concrete tilt panels

ABCB proposed solution

Add sub-subclause to C1.9(d)

-Weather sealing materials used within and between concrete tilt panels that are not larger than necessary for the purpose.

Members' recommendation

11.1 s22

Support Office recommendation and no further comment apart from it would be welcome change/clarification.

11.2 s22

Support ABCB recommendation without further comment.

11.3 s22

No position or comment provided

11.4 s22

Support in principle.

Concerns are raised in relation to the reference to weather sealing materials being 'not larger than necessary' as this is qualitative and open to interpretation.

It is recommended that consideration be given to restricting the size of any weather sealing materials (e.g. identifying a maximum size or cross sectional area) or the total surface area of an external wall that weather sealing materials can form (XX% of the surface area of an external wall)?

Comment: Consideration may also need to be given to the types of materials that can be used for weather sealing to ensure that the material do not create an undue risk or fire spread

11.5 s22

Support in principle for limited by % volume of wall materials.

11.6 s22

Support in principle. Would like to see clearly defined parameters as opposed to ‘no larger than necessary for the purpose’.

11.7 s22

Support ABCB recommendation.

12. Elements supporting reinforcing bars that are encased in concrete**ABCB proposed solution**

Proposed solution is dependent on the outcome of item 19, and may also be considered under proposed drafting under item 19.

Add new sub-subclause to C1.9(d)

(vii) Concrete and associated minor elements wholly encased in concrete.

Members' recommendation**12.1 s22**

Support Office recommendation and no further comment apart from it would be welcome change/clarification.

12.2 s22

Support ABCB recommendation without further comment.

12.3 s22

Support ABCB recommendation without further comment.

12.4 s22

Support ABCB recommendation. It is recommended that this be considered in conjunction with item 19 and that any proposed subclause combine the two requirements to avoid having separate provisions.

12.5 s22

Support in principle for limited by % volume of wall materials.

Comment: Could be another category if concrete cover provides required DTS FRL to cast in combustible elements

12.6 s22

No position or comment provided.

12.7 s22

Support ABCB recommendation.

13. Articulation joints associated with brick work**ABCB proposed solution**

Add new subclause to C1.9(d)

compressible foam, polystyrene filler and backer rods —

-associated with vertical articulation joints of concrete and masonry wall construction; and
-shielded from free air; and
-not larger than necessary for the purpose.

Members' recommendation

13.1 s22

Articulation joints are generally well understood and have defined products and uses and would unlikely need additional controls

13.2 s22

Support ABCB recommendation without further comment.

13.3 s22

No position or comment provided

13.4 s22

Support in principle.

Concerns are raised in relation to the reference to materials provided within articulation joints being 'not larger than necessary' as this is qualitative and open to interpretation.

It is recommended that consideration be given to restricting the size of materials used within articulation joints (e.g. identifying a maximum size or cross sectional area) or the total surface area of an external wall that articulation joints materials can form (XX% of the surface area of an external wall)?

Comment: Consideration may also need to be given to the types of materials that can be used for weather sealing to ensure that the material do not create an undue risk or fire spread.

13.5 s22

Support in principle for limited by % volume of wall materials.

13.6 s22

Support in principle. Would like to see clearly defined parameters as opposed to 'no larger than necessary for the purpose'.

13.7 s22

Support ABCB recommendation.

14. Brick ties and other (acoustic ties)

ABCB proposed solution

Add new sub-subclause to C1.9(d)

acoustic ties, and wall ties associated with masonry wall construction and comply with AS/NZS 2699.1

Members' recommendation

14.1 s22

Brick ties are generally well understood and have defined products and uses and would unlikely need additional controls

14.2 s22

Support ABCB recommendation without further comment.

14.3 s22

Support ABCB recommendation, and this assumes each tie is physically separated from other items.

Comment: The brick/acoustic tie shall be required to function structurally if the resilient material is thermally degraded or not present.

14.4 s22

Support ABCB recommendation without further comment.

14.5 s22

Support in principle for limited by % volume of wall materials.

14.6 s22

Support in principle. Would like to see clearly defined parameters.

14.7 s22

Support ABCB recommendation.

15. Texture finish coating, primer or similar finish or coating**ABCB proposed solution**

Amend C1.14(l) as follows:

- (l) A paint, lacquer, or similar finish or coating where —
(A) each layer does not exceed in 1 mm thickness; and
(B) the total finish system does not exceed 2 mm thickness.

Members' recommendation**15.1 s22**

Support ABCB Office recommendation and approach.

15.2 s22

Support ABCB recommendation without further comment.

15.3 s22

Support in principle for 1 mm exemption.

Comment: 2mm thick of polyethylene based coating is 2/3 of the fire load that PE ACP provides therefore a high risk

Item 15 and 16 should be consistent in requirements.

15.4 s22

Support in principle.

It is unclear whether the issues relating to 'textured finish coating' and 'primers' being captured under C1.14(l) is resolved by the proposed change, as neither term is included in the proposed drafting of this subclause.

15.5 s22

Support in principle for;

- Any building if limited combustibility level 1; and
- Limited combustibility level 2 to buildings 25 m or less.

15.6 s22

Support in principle. A limited combustibility requirement under C1.9(e) should be a consideration.

15.7 s22

Support ABCB recommendation.

Comment: There is some concern on paint types and potential flammability. Consideration to restricting highly flammable types regardless of thickness is recommended. Suggest to include restriction same as C1.19 (c)(viii), other than nitro-cellulose lacquer.

16. Render systems

ABCB proposed solution

Add sub-subclause to C1.9(e)

-Render systems having a Spread-of-Flame Index and the Smoke-Developed Index as a whole do not exceed 0 and 3 respectively.

Members' recommendation

16.1 s22

Suggest using the same approach proposed for texture finish coating

16.2 s22

Support ABCB recommendation without further comment.

16.3 s22

Comment: Fire spread over wall surfaces was reviewed in FCRC in the 90's. AS 1530.3 was seen to have some limitations in correctly ranking risk and therefore the changes in C1.10 to the AS 3837 or AS 9705. Suggest using those methods would be progressive.

Research into available evidence (BS 8414\AS 5113) on tradition cement and typical polymer renders may provide insight\quantify the risk these systems pose to fire spread and lead to confidence in suitable tests to benchmark performance

16.4 s22

Support in principle.

The paper indicates that the specific criteria is 'yet to be determined'. It is recommended that consideration be given to identifying a maximum thickness for renders that are combustible, in addition to the proposed Spread-of-Flame-Index and Smoke-Developed-Index.

16.5 s22

Support in principle for;

- Any building if limited combustibility level 1; and
- Limited combustibility level 2 to buildings 25 m or less.

16.6 s22

Support in principle. A limited combustibility requirement under C1.9(e) should be a consideration.

16.7 s22

Support ABCB recommendation.

s22

s22

19. Clarification on treatment of concrete, masonry, structural steel and other similarly inherent non-combustible materials

ABCB proposed solution

Add new sub-subclause to C1.9(e)

-A material entirely composed of concrete, steel, masonry or aluminium.

-Autoclaved aerated concrete.

-Concrete and terracotta rooftiles.

Members' recommendation

19.1 s22

Support specifying these items in the NCC as per the previous HIA PFC as on this has been an item of significant calls/enquiries and will be well received by industry.

Support ABCB office recommendation and comment.

19.2 s22

Support ABCB recommendation without further comment.

19.3 s22

Support ABCB recommendation.

Comment: Fee for AS 1530.1 is not \$3900 but \$1800-\$2200

19.4 s22

Support in principle.

Consideration should be given to restricting the exemption to only apply where these types of components comply with the relevant Australian Standard (where applicable), e.g. concrete structures that comply with AS 3600.

19.5 s22

Support ABCB recommendation.

19.6 s22

No position or comment provided.

19.7 s22

Support ABCB recommendation.

Comment: Fixings to be non-combustible and suitably resistant to the effects of fire as for new DTS materials.

s22

s22

21. Mechanical fixing of bonded laminate material for Type A and B construction

ABCB proposed solution

C1.11 Performance of external walls in fire

(a) Concrete external walls that could collapse as complete panels (e.g. tilt-up and pre-cast concrete), in a building having a rise in storeys of not more than 2, must comply with Specification C1.11.

(b) In a building required to be of Type A or B construction, bonded laminated materials must not be solely fixed with adhesive to the external wall.

Members' recommendation

21.1 s22

1. Cassette mounts are an acceptable method of fixing bonded laminates and should not be captured is some light as double sized tape adhesive fixing. Cassette mounts have a range of suitable proprietary systems

2. There are other types of bonded laminate materials that could include sandwich panel type systems that are not constructed in separate construction elements and fixed on site and rather are

made off site and assembled on site as a complete panel. Wording should ensure that it doesn't unintentionally capture fixing of these bonded laminate material systems.

21.2 s22

Support ABCB recommendation without further comment.

21.3 s22

No position or comment provided.

21.4 s22

Support in principle.

It is recommended that any new DtS provisions clearly identify that the mechanical fixing must pass through all layers of the bonded laminate material if that is the proposed intention. It is also recommended that the new DtS provision apply to all cladding materials and not just bonded laminate materials.

Comment: Whilst the proposed DtS provision identified above may address some of the concerns relating to the use of adhesives/double side tapes and assist in improving the issues associated with bonded laminate materials delaminating, as conveyed in our comments above these provisions need to be expanded to capture all cladding types materials.

The s22 also remains concerned that the concession afforded to bonded laminate materials under C1.9(e)(vii) still creates potential issues in relation to 'debris', and vertical and/or horizontal fire spread resulting from the glue in bonded laminate materials being exposed to fire, and request that this matter be referred to the BCC for consideration.

21.5 s22

Mechanical fixing of bonded laminate material for Type A and B construction is identified in NSW as an issue requiring attention; however AIBS is not aware of this being an issue in other jurisdictions. There is a possibility that the issue exists in NSW where there is no independent assessment of the engineering design documents. In our view, an absence of mechanical fixing of this type of material to a building of Type A or B construction would be unlikely to satisfy requirements of NCC BCA Part B. If NSW engineering designers are competent, this suggests this aspect of design is likely simply not being designed in NSW. This issue may also arise in other jurisdictions, however the ABCB Office hasn't provided evidence that this is occurring so that it is not possible for s22 to support the proposed approach at item 21 for two reasons as follows:

1. There is no demonstrated need nationally that there is an issue;
2. The issue could be addressed by proper application of existing requirements of NCC BCA Part B.

21.6 s22

No position or comment provided.

21.7 s22

Support in principle. This proposed new clause (b) does not fit well within C1.11 Performance of external walls in fire. This clause typically effects/applies to Type C buildings rise is storeys of 2 and some type B Class 2 buildings limited to 2 storeys.

Type A and B buildings across the classifications range are most commonly 3-4 storeys and above.

Suggest new content be developed and inserted into the intentionally left blank Clause C1.12.

Comments: Adhesive tape fixing even with the added provision of mechanical fixings at (b) on buildings above 2 storeys is not considered ideal.

22. Other items not yet considered in the scoping paper

22.1 s22

Item: Framework for consideration of the above 21 items.

Discussion: The above items and proposed amendments consider each element in isolation and do not consider the potential impact on a façade overall if all potential items were installed/applied.

There is an overall concern that the aggregate of additional combustible materials may be a fire spread risk due to the overall quantity (mass or the area and extent) Further the exemptions may be used as the new benchmark for “comparison to DTS” by fire engineers in their CV3 assessments, thereby making the DTS wall = non-combustible + xkg/m² of combustible materials allowed by C1.9 and C1.14.

General rules could be provided as an overlay to ensure the addition of exemptions does not lead to a risk.

Proposed Solution:

Materials that run contiguously may need extent limitations.

General rules could include:

1. No material may cross a cavity barrier (vertical or horizontal)
2. No material may be contiguous over more than one level vertically
3. No material may be contiguous over more than one SOU horizontally
4. No material may be contiguous over more than one fire compartment horizontally.
5. Not directly above an exit

Moisture control barriers (sarking) would need to be exempt.

Contiguous vertically means separated by a cavity/fire barrier or ???mm (maybe 900mm) vertically.

Contiguous horizontally means separated by a cavity/fire barrier or ??mm (maybe 300mm) vertically.

These rules are similar to those mentioned in section 5 thermal breaks in UK regulations.

It is recommended that there should be a total limit of by mass in any one m² (max limit) and for a larger area an average m² (lower limit). This will go some way to control the potential misuse of the practical assistance this clause can offer.

The passenger rail vehicle standards AS 7529.3 (and EN 45545) is an interesting approach worth considering but may be too complex for building facades. The approach for fire performance of the interior of passenger vehicles is to regulate major items. Minor items (unclassified item) are exempt from testing if less than 10grams, compliant with rules being separation distance from other minor

items. If the minor items are space less than the required distance, they are not considered discrete items and fire test requirements apply. See EN 45545-2:2013 section 4.3.

A similar approach could be investigated.