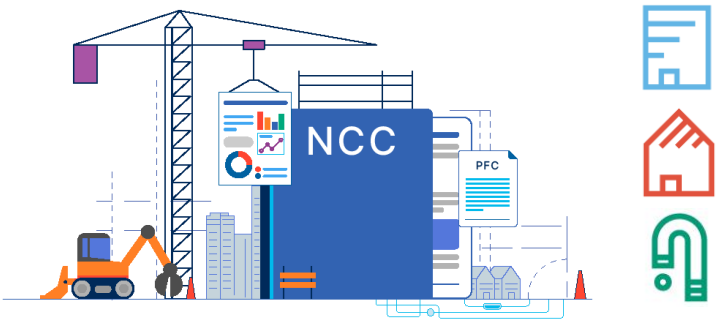
NCC Public Comment Draft response sheet



This response sheet is to be used for submitting responses to the National Construction Code (NCC) Public Comment Draft.

How to use this response sheet

1. Provide your details including name, organisation and contact details.
2. Your response may include:
   - technical issues (see example provided)
   - simplifying the content (whilst retaining the technical intent of the changes)
   - editorials/corrections
   - support for the proposed changes.

   Limit your response to feedback on the tracked changes within the drafts. Responses beyond this will not be considered.
3. Provide your response(s) to the Public Comment Draft. For each response you should include—
   - the relevant NCC volume(s) that your response relates to by clicking in the appropriate box(es);
   - the "**Clause/Figure/Table**" that you are responding to, e.g. J6D3(1)(a), Housing Provision Figure 7.2.3 or Table C2D2;
   - your "**recommended change to draft**", e.g. it is recommended that the proposed drafting to J6D3(1)(a) be amended as follows…(*see example*);
     If you are not recommending a change, insert "N/A" in this field;
   - your "**comments/reasons for change**". This should include justification to support your recommended change, e.g. heaters that emit light do not need to be excluded because these heaters have already been exempted by J6D3(3)(d) (*see example*).

     If you are including multiple "**comments/reasons**", use dot points or a numbered list.
4. Submit your response using the online response form on the ABCB's Consultation Hub website.

Notes:

Completing all relevant fields will help to describe what change in the Public Comment Draft you are commenting on, what your alternative change is and why it should be made.

This response form is to only be used for submitting responses to proposed NCC amendments contained within the NCC Public Comment Draft. If you wish to make comments or a submission on documents that have been released with the Public Comment Draft, please follow the instructions accompanying that document.

Response Sheet

Your details

Name: Paul Zanatta and Ruth Nordstrom

Organisation(s): Joint submission by Australian Institute of Architects and the Association of Consulting Architects Australia

Email or Phone No: policy@architecture.com.au or 03 8620 3847

Response(s) Other

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: E1D9

Recommended change to draft:

Amend the title for Clause E1D9 as follows: Where sprinklers are required: ~~Class 7a building, other than an open-deck carpark~~"

Comment/reason for change:

Consistency with the main wording of the clause which proposes to delete the words, "other than an open-deck carpark"

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: E1D5, E1D9, S17C2, S5C19 and S5C22

Recommended change to draft:

Nil

Comment/reason for change:

The Institute supports the change to remove concessions for open deck cars in the interest of public safety, and insurability of assets, recognising that there is evidence that electric vehicle fires are more difficult to suppress than those of internal comnbustion engine vehicles. However, it would have been beneficial for a regulatory impact statement to have been prepared.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: S5C19 (1)(b)(ii)

Recommended change to draft:
A note or explanatory information should be added to explain the intention of the amended subclause, "*which is located above, but not ~~or~~ below, another classification, and the floor separating the classifications complies with C3D10; or,"*

Comment/reason for change:

It is not clear if the intention is that a sprinkler protected car park can no longer be situated below another class such as a Class 2 apartment or Class 5 commercial offices in a Type A structure when this subclause clause is read in conjunction with subclause (1) above it.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: B1P1(2), B1V1, H1P1(2), and A2G2

Recommended change to draft:
Nil

Comment/reason for change:
Structural reliability and removal of expert judgement for structural performance solutions. These proposed changes, to provide new minimum levels of reliability which must be achieved when demonstrating compliance of structural components through a performance solution and to remove expert judgement as an assessment method for structural performance solutions, are supported.

We note that these provisions are included primarily for the project structural engineering consultant to address and in this light, beyond the expertise of an architect to appraise. While being supportive of the change in principle, the appropriateness of the proposed formulae is not something that the Australian Institute of Architects can provide critical review as structural performance solutions are determined by engineers. However, it will provide greater assurance to architects that the performance based solution is at or better than the deemed to satisfy requirement on some objective basis and a means to compare.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F4D4

Recommended change to draft:
Nil

Comment/reason for change:

Women's sanitary facilities. The changes proposed to increase the provisioning of sanitary facilities are supported.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F4D4(6)

Recommended change to draft:
(6) Adequate means of disposal of sanitary products must be provided i~~l~~n sanitary facilities for use by ~~females~~ all persons, regardless of gender, In sanitary facilities used by females the following must also be provided:
(a) A dispenser for sanitary products.
~~(6)(b) Adequate means of disposal of sanitary products~~

Comment/reason for change:

Sanitary products are not limited to menstrual care and are also used for the management of continence problems. The Continence Foundation of Australia notes that 1 in 3 Australians will experience continence problems at some point in their life and that at any time 1 in 7 seven Australians are experiencing a continence problem.

Although women are more likely to experience continence problems, men also experience continence problems due to the specific pathologies and consequence of treatments in relation to the male genito-urinary tract together with urinary problems experienced by both females and males. (Source: Continence Foundation of Australia, Continence in Australia - a Snapshot June 2019. See: https://www.continence.org.au/sites/default/files/continence_in_australia_snapshot_1.pdf

The national Bins4Blokes campaign led by the Continence Foundation of Australia aims to provision disposal bins in male toilets. See: https://bins4blokes.org.au/#:~:text=We%20believe%20that%20every%20Australian%20should%20have%20access%20to%20disposal,and%20join%20in%20everyday%20activities

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: D3D27(1)

Recommended change to draft:
2) The requirements of (1)~~(a), (c) and (d)~~ do not apply to a door, other than a door in a Class 9b early childhood centre, Class 9a health care building or Class 9c residential aged care facility fitted with a fail-safe device that automatically unlocks the door upon the activation of a fire alarm and—

Comment/reason for change:

Class 9a and particularly Class 9c residential aged care facilities see people living with various forms of dementia. Some people with dementia may exhibit wandering behaviours and suffer injury or harm through entering a fire escape unescorted.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: D3D27(3)

Recommended change to draft:
3) The requirements of (1)(e~~b~~) do not apply to a door in a Class 9b early childhood centre, Class 9a health care building or Class 9c residential aged care facility fitted with a fail-safe device that automatically unlocks the door ~~serving the Class 9b early childhood centre~~ upon the activation of a fire alarm.

Comment/reason for change:

Class 9a and particularly Class residential aged care facilities see people living with various forms of dementia. Some people with dementia may exhibit wandering behaviours and suffer injury or harm through entering a fire escape unescorted.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: D3D27(2)(a)(i)

Recommended change to draft:
(i) on at least every fourth storey, ~~the doors are not able to be locked and~~ a sign is fixed on such doors stating that re-entry is available upon the activation of a fire alarm; and

Comment/reason for change:

Leaving doors unlocked, especially in Class 2 multirise apartments can creates a security risk for occupants with intruders being present on a floor from another floor or breach of the external door without legitimate purpose.

In large buildings it is important for people to safely egress the emergency stairwell. In a given emergency the ground level egress may be compromised by the emergency episode and therefore entry at every fourth floor when the fire alarm is activated provides an alternative means to egress the firewell and/or seek safe refuge on an alternative floor to the one from which the person may have entered the stairwell.

If the intention of this clause, as put in the PCD, is that the re-entry at every fourth floor was only intended when the fire alarm is activated, then this is not clear.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: E4D8(a)(iii)

Recommended change to draft:
Nil

Comment/reason for change:

The addition of low power consumption hybrid signs creates an operational efficiency for carbon emissions compared to older battery supplied signs. It also does not require the sign to be dependent on an external light source with respect to passive photoluminescent signs.

NCC Volume(s): ☒ One ☒ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: S7C4, H3D2, C1V3

Recommended change to draft:
Nil

Comment/reason for change:

The requirement for the use of an Accredited Testing Laboratory is supported.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: Referenced documents

Recommended change to draft:
Align or include reference standards. See comment/reason for change.

Comment/reason for change:

AS1428.1 The previous 2009, 2001 and 1993 versions are still referenced and need to be updated to AS1428.1: 2021.

We note the longstanding arrangement whereby the Australian Building Codes Board and the Commonwealth Dept of Industry Science and Resources have maintained their alignment between the referenced standards that appear in Clause *A3.1 Documents adopted by reference* in the Disability (Access to Premises — Buildings) Standards 2010 (pursuant to the Disability Discrimination Act 1992) and the reference standards for the National Construction Code. The reference standards need to be updated by both agencies of government.

AS1428.2:1992 . This standard should also be included in the referenced documents as it is hoped that during the life of NCC2025 that AS1428.6 *Design for access and mobility, Part 6: Fixtures and fittings* will assume all of the specifications of AS1428.2:1992

AS 1428.5:2021 Design for access and mobility, Part 5: Communication for people who are deaf or hearing impaired. This standard should be included as a referenced document.

AS1735.12 The currently referenced version for AS1735.12 is the 1999 version which needs to be updated to AS1735.12:2020 However there are also alignment issues with the National Construction Code which need to be resolved and therefore until AS1735.2:2020 is amended, it should not be referenced in the NCC. These include:

- AS1735.12:2020 Clause 5.2.1 openings not as per NCC. AS1735.12-2020 specfifies 800mm for type 1 cars and for existing type 2 cars. These dimensions should be 880mm to slign with NCC.
- NCC car dimensions are greater than those in AS1735.12:2020 Clause 5.3.1 and Table 3 and therefore it is preferable that the NCC defines minimum car sizes.
- AS1735.12:2020 Clause 5.3.2.1 handrails are more than currently required and effectively means handrails on all sides where possible. Details are not to AS1428.1 creating a conflict with that standard as also referenced in the NCC.

Response(s) - Condensation

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F8P1 and F8D2

Recommended change to draft:

The explanatory information should be clear about why the provisions of Part F8 Condensation management apply only to the sole occupancy units of building classes 3 and 9C.

Comment/reason for change:

Evidence suggests that these provisions set out in this part are very important when building spaces experience less than 8 air changes per hour. Sole occupancy units such as single room (+/- bathroom) in hostels, hotels and residential aged care facilities are subject to overnight use with condensation from normal human processes of breathing and perspiration. There may also be companion animals and plants. Therefore the need for application in SOUs is understood. However, non SOUs (communal amenities) especially in Class 9C buildings may be associated with higher levels of occupancy or activities that increase ambient humidity:

- hair dressing/salon including washing
- arts and crafts activities
- physical exercise activities and social events such as dancing.
- use of medical and non-medical devices such as nebulisers and footspas
- presence of aquariums and small water features/indoor gardens to provide a calming feature that helps some people living with dementia who may experience anxiety
- rooms with an accessible spa bath for occasional use by any resident.

All of these features suggest that it would make sense to apply the part to non-SoU areas under prescribed DTS conditions.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: Clause F8D3 and Table F8D3

Recommended change to draft:

Clarity in the draft is required about whether all external wall constructions systems for SOUs in Classes, 2, 3 and 9c in Climate Zones 4 and 5, with exception of sandwich panel systeds, require a drained and vented cavity under all circumstances.Clarification could be made via an explanatory note or re-wording of Clauses (2)-(5)

Comment/reason for change:

- Clause (5) of F8D3 the “X” marked in Table F8D3 for Climate zones 6,7 & 8 , as well as the Explanatory Information all make it abundantly clear that a drained and vented cavity is required in Zones 6, 7 and 8 for all external wall construction systems with the exception of insulated sandwich panels.
- However it is unclear for Zones 4 and 5:
  - Clauses (2)-(5) especially Clause 4 would suggest that there always would be a cavity together with a primary insulation layer, control layer, water barrier or sheathing in Zones 4 and 5
  - Table F8D8 does give specification to a membrane for walls in Zones 4 and 5 “without cavities”. This is where there is confusion and therefore, clarity is required.

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Clause/Figure/Table: Clause F8D5(1)(a) and F8D6 (1)(c)

Recommended change to draft:

Clarification and explanatory information and diagram to be provided about whether in respect of subclause F8D5 (1)(a) “*has a height not less than 18 mm at any point;and*” and F8D6 (1)(c) “*is not less than 18 mm as measured perpendicular to the plane of the roof; and* “ are taken to measured from the lowest point of the drape of any membranes that are located above the insulation. The term “space” is used in F8D5 (1) (a) and the phrase “ventilated cavity” is used in F8D6 (1)(c). Consistent terms are better to be used.

Comment/reason for change:

It is important to ensure that the height is actual and not nominal as determined by the roofing material, framing and batten structures alone. Positioning of insulation can vary according to the roof system (e.g. cathedral roofs with exposed rafters vs. cathedral roofs w/o rafters.

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Clause/Figure/Table: F8D6

Recommended change to draft:

Create options in the explanatory information about BAL FZ requirements in accordance with AS 3959 recognising that AS 3959 does allow for 2mm mesh.

Comment/reason for change:

It is recognised that 2mm mesh does have a maintenance requirement to alleviate occlusion by debris which, when unmaintained, defeats the purpose of the mesh. This is a matter that more broadly should be part of public education on building maintenance equivalent to cleaning gutters, preparing for flood or bushfire. However given that AS 3959 does permit the mesh and subject to evidence that the mesh does not present a bushfire risk, then the DTS clauses should have explanatory information so that architects, building designers and builders simply do not avoid mesh and its benefits through a blanket exclusion. Instead the NCC provisions should encourage the inclusion of an appropriate ventilation method.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F8D6

Recommended change to draft:

Addition of explanatory information and preferably diagrams to show where the minimum 18mm cavity is intended to be located with respect to the membrane (control layer or water barrier), and insulation.

Comment/reason for change:

Condensation and even ice build up can occur on either side of a membrane F8D6 1(a) implies that the 18mm or greater ventilation cavity it can be located above either the insulation or the membrane while f8D6 (2)(b) states that the membrane must be located immediately above the primary insulation layer – without specifying if the two should be separated by a minimum 18mm ventilated cavity or whether the membrane can be in contact with insulation.

Response(s) Waterproofing

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F1D4(1)

Recommended change to draft:

F1D4

Provision Of Drainage and Grading to External Areas

(1) A concrete roof, balcony or similar part of a building must have

(a) the structural substrate graded with a minimum fall of 1:80 in the plane of the substrate to the floor drain, rainwater outlet or other drainage outlet;

Notes

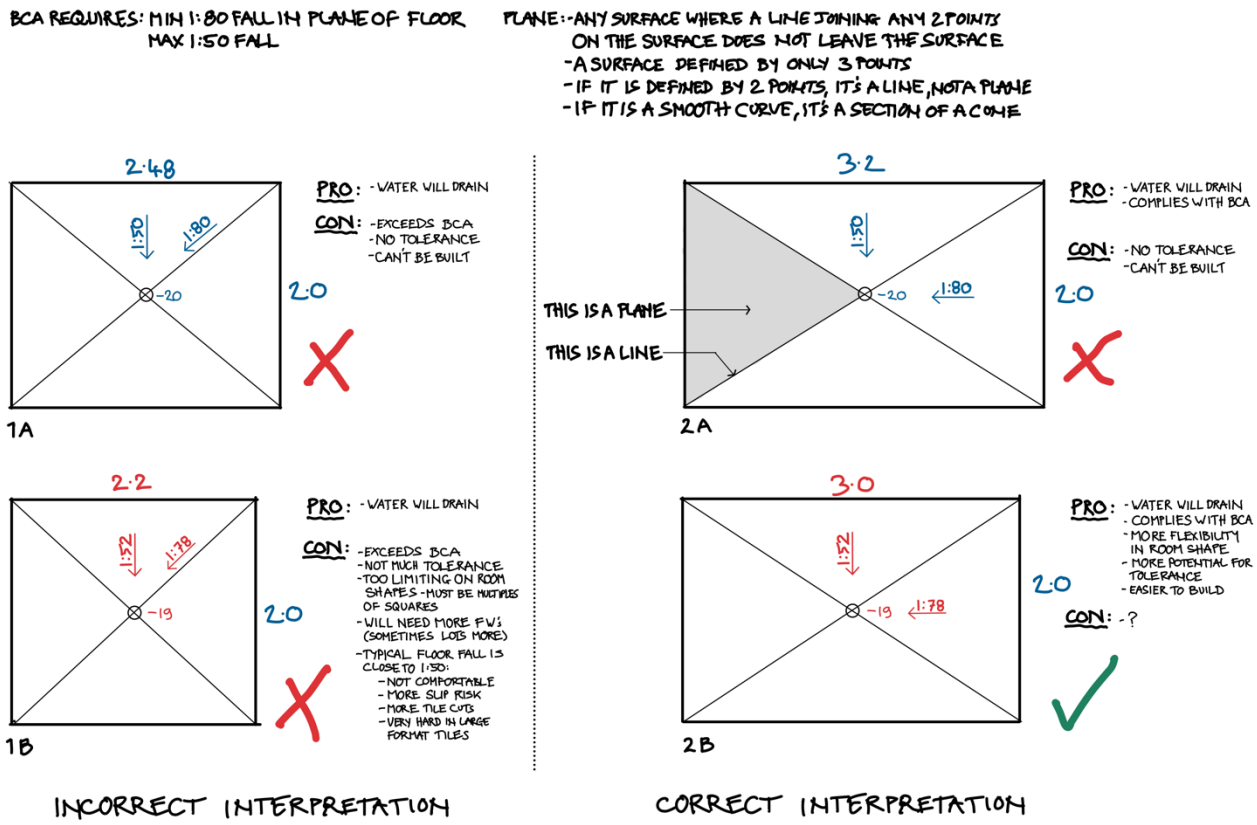
For the purposes of this part, a tile bed, screed, topping, or similar component is not considered a structural substrate

For the purposes of section F, the plane of the floor or substrate is taken to mean the predominant fall of the surface in question, typically perpendicular to bounding walls, and is not referring to the diagonal intersection between planes.

except within planter boxes where it can be used to achieve the minimum fall of 1:80.

Comment/reason for change:

This inclusion would bring consistency with the similar clause, F2D4(2), regarding internal wet areas introduced in BCA 2022. The additional note describing the meaning of 'plane' is critical as this is causing significant confusion in the industry and is being misinterpreted by many people. For clarity, when recommending that the 1:80 falls be nominated for external balconies etc. the Technical Reference Group intended this as being on the plane, not measured on the diagonal, and reflects the TRG's intent when including the word 'plane' in clause F2D4(2) for internal wet areas. Whilst providing clarity and preventing unnecessary confusion and costly rework related to F1D4 being considered in this draft, it would also clarify the intent of the existing clause for internal wet areas without having to make any actual changes to the existing clause F2D4(2). As background, with regard to Clause F2D4(2) Floor Wastes (relevant to internal wet areas) the requirement for minimum 1:80 falls in the plane of the floor combined with the recently added requirement for maximum falls of 1:50, makes bathroom falls almost impossible to achieve if the interpretation of 'plane' includes the diagonal intersection. This interpretation is being adopted by certifiers believing it to be the most onerous possible interpretation. Unfortunately, by taking this convoluted view, they are backing the industry into a situation where compliance is almost unachievable. To achieve a minimum 1:80 fall at the diagonal and a 1:50 maximum fall on the plane (perpendicular to the wall) the area being drained has to be almost perfectly square and has almost no ability to design in tolerance to allow for the realities of placing concrete. With this interpretation, for a completely square space, if the concrete is poured with the waste level even 2mm up or down from it's designed level, the floor would be noncompliant. This level of tolerance is not achievable in concrete. It is unrealistic in the extreme to expect that all bathrooms will be made up of purely square spaces and as such, many bathrooms currently being designed would require 4 or more floor wastes for a small bathroom. It should also be noted that even in square areas with single outlets, the predominant fall of all the floor planes will be almost exactly 1:50 which means that almost all parts of a bathroom floor will be at the maximum permissible fall. This is undesirable as it becomes uncomfortable to walk on, particularly for people who are elderly, infirm or disabled. When also adding in the increased slip risk of unnessecarily steep falls in floors with water on them, this erroneous interpretation is therefore increasing confusion, complexity and cost while arguably providing a poorer level of amenity for building occupants. As noted above, our suggested changes to clause F1D4(1) and the explanatory notes will both prevent this unintended consequence from being repeated in external balcony areas as well as clarifying the intent of clause F2D4 without actually having to change F2D4.



NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: F1D4

Recommended change to draft:

(2) A concrete roof, balcony, podium, or similar part must have a minimum

(a) 70 mm step down from the internal ~~floor~~ structural slab level (SSL) to the external structural substrate; and

(b) 70 mm high integral hob around its outside edge ~~perimeter; and~~

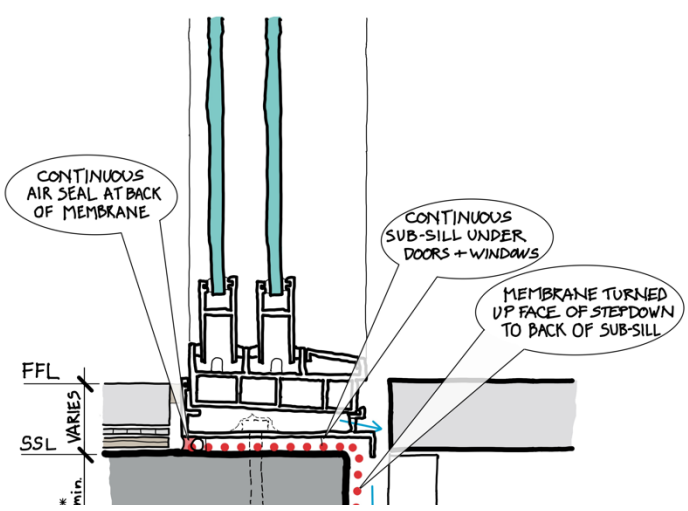
~~(c) F1D4(2)(b) does not apply where the external structural substrate abuts an external wall or door.~~

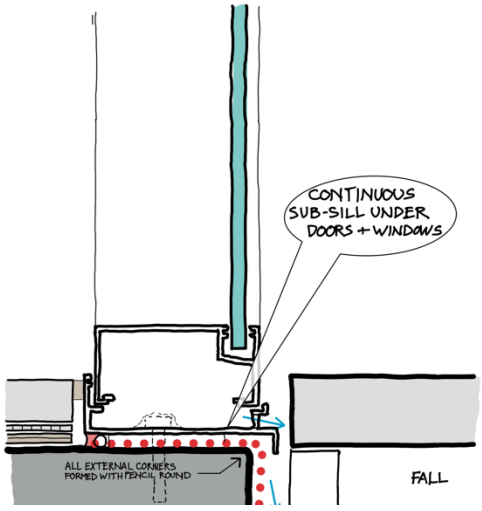
Comment/reason for change:

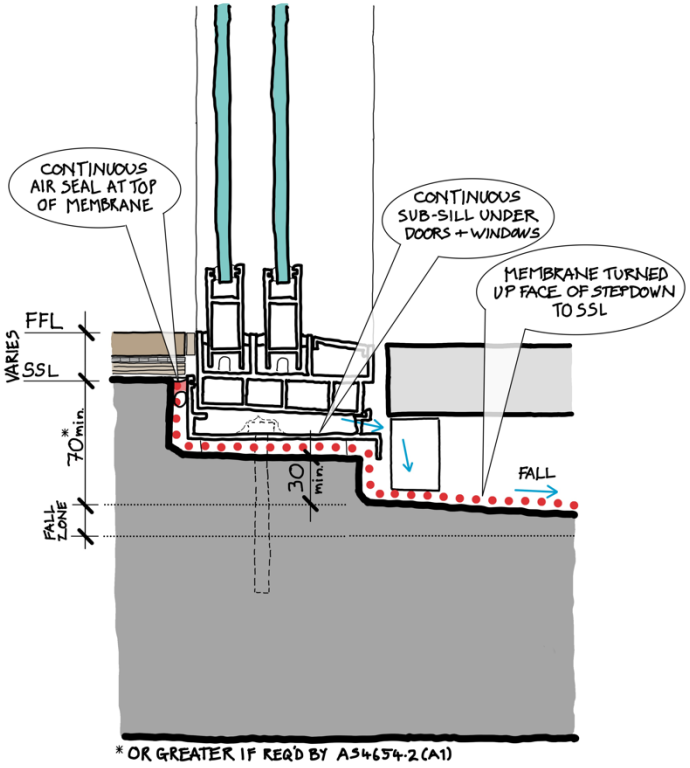
For Clause (a):

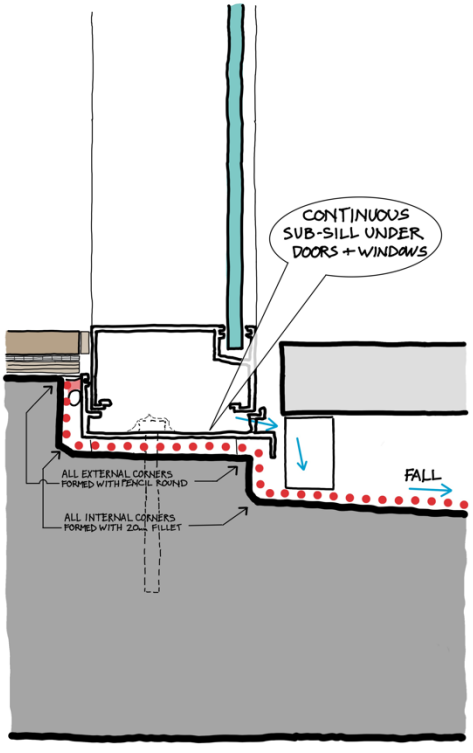
It is important to clarify that the 70mm stepdown is in the concrete / structure and is not from the internal floor finish level. If it was left without this clarification, there would be confusion as to which level the 70mm is measured. If certifiers interpret this as being allowable from the internal finished floor level, part or all of the stepdown would be formed by an applied angle on top of the concrete. This outcome would pose a

greater risk of water defects as the angle would be relying on sealant and membranes to maintain it's capacity to 'collect' the water and prevent it from leaking into the inside. This would be similar to the cold joint at a concrete hob poured after the main slab has cured (which is a detail the proposed updates in this draft are specifically attempting to prevent.) See sketches below of how the stepdown should look in various examples









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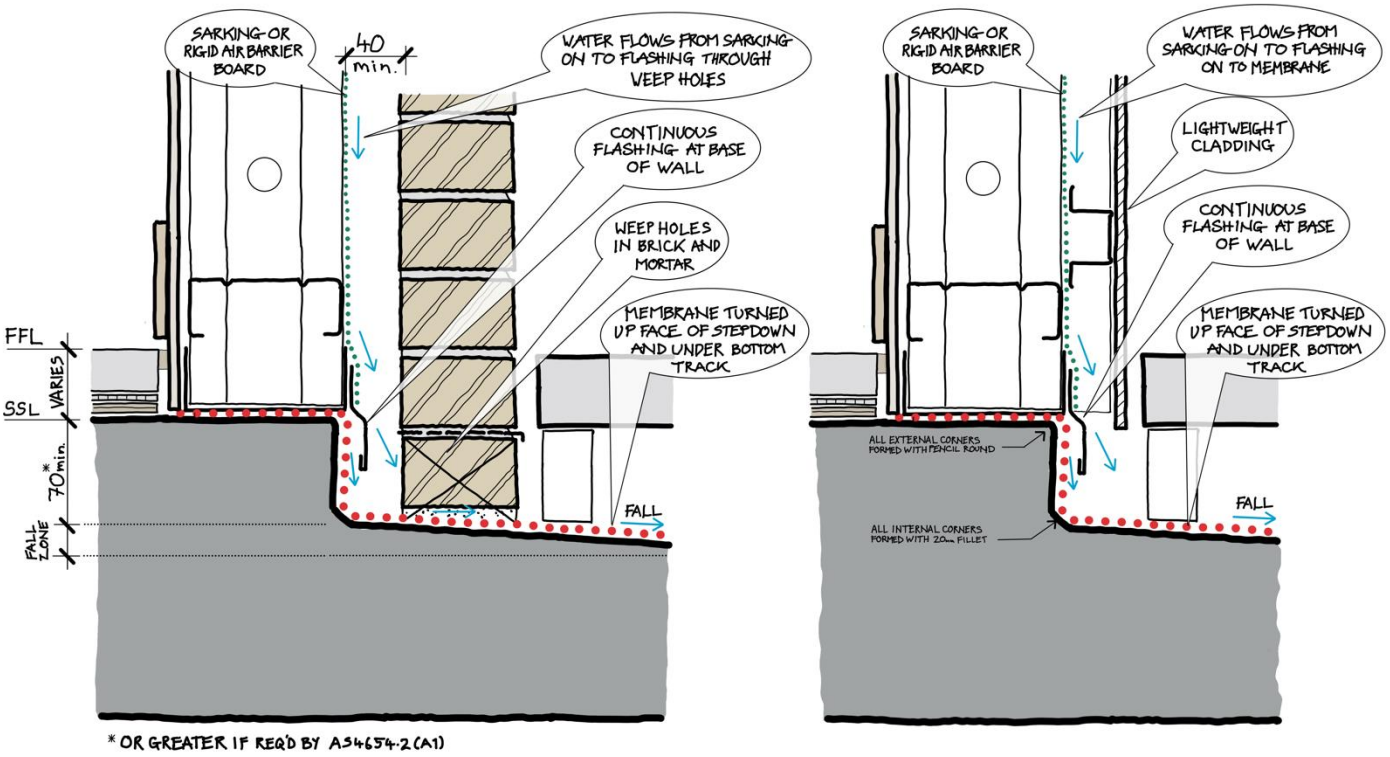

Ⓓ SOLID BALCONY WALLS

For Clause (b):

Clause (b) is clumsily worded to the point that clause (c) is required to clarify it. By changing the wording of clause (a) as we have suggested, we believe it would provide enough clarity to allow for the removal of clause (c).

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Clause/Figure/Table: F1D10

Recommended change to draft:

F1D10

Surface Finishes

In a building or part of a building, the flooring or surface finish of a roof, balcony, terrace, podium, or similar part of a building must be

(a) self-draining; or

(b) directly fixed to a membrane complying with F1D7.

Limitations

F1D10(a) does not apply to areas subject to vehicular traffic.

Explanatory Note. A self draining floor finish is one which allows water to intentionally drain through it to the point where water does not build up on it's surface. Examples are pavers on pedestals or suspended timber decking

Comment/reason for change:

It is important that there is a description of what a self draining floor is.

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Clause/Figure/Table: F1 Generally

Recommended change to draft:

See previous comments on individual clauses

Comment/reason for change:

In our opinion, the proposed changes should provide significant improvements in the waterproofing of buildings which come under Volume 1 of the NCC and will go some way to reducing the cost of building rectification work required to deal with this issue at present (identified in the Acil Allen report as being a $4Bn problem Australia wide). The amendments we have suggested for some clauses should assist with clarity and certainty, items which have a large and costly impact on our day to day operations as designers.

We recognise that there are many existing buildings which will undergo refits or remedial work, particularly as we move towards retaining buildings where possible, rather than demolishing and re-building them. In certain cases, these buildings may not be able to meet the DTS provisions for falls in the main structural substrate however, there are obvious mechanisms which can be used without relying entirely on DTS solutions. We would hope that members of the various industry bodies (ACRA, MBA, EA, RAIA etc.) can work towards the development of industry wide guidelines to illustrate 'what good looks like' in the remedial and retrofit project space.

We would also note that each of the items discussed in our submission would benefit from having a simple diagram included to help clarify the intent. In an industry which relies primarily on drawings to communicate design intent from conception to completion, we feel the legibility and clarity of the NCC would improve dramatically if it incorporated more drawings and diagrams.

Response(s) Housing Provisions

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Clause/Figure/Table: General - Materials

Recommended change to draft:

Include embodied carbon according to NABERS methodology in NatHERS and NCC requirements.

Comment/reason for change:

New emerging high performing natural biogenic materials are increasingly being used across Australia. These are beneficial in lowering whole of life carbon as some materials such as woodfibre have a operational and embodied carbon benefit.

A methodology similar to the Section J calculation of materials needs to be regulated to provide accountability in energy modelling. CSIRO is able to activate the library in the back end of the NatHERS software.

The Institute is calling for consistent methodology of measurement and there is already a difference between the NatHERS accredited software as Hero is moving forth with the calculation methods.

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Clause/Figure/Table: 10.8.1(2) Subject to (5)

Recommended change to draft:

10.8.1(2) Subject to (5), any control layer, sheathing or water barrier incorporated between the cladding and the exterior side of the primary insulation layer in an external wall must achieve the vapour permeance specified in Table 10.8.1

Comment/reason for change:

10.8.1 (2). There needs to be a definition of sheathing. Does it include ply or OSB that may typically referred to as sheet bracing? Does it matter if the bracing/sheathing only covers a certain percentage of the wall? Maybe a more generic term could be used to cover all the other sheet building materials that may be be placed between the external side of the primary insulation layer and the drained cavity.

10.8.1(2) Ply or OSB bracing would have an equal condensation risk as sheathing

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NCC Volume(s): ☐ One ☐ Two ☐ Three ☒Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: 10.8.3 2(c) Ventilation in roof spaces

Recommended change to draft:

Bal FZ should not be excluded as there are suitable class 4 membranes on the market which can protect from fire and breathe adequately.

Comment/reason for change:

This will force an alternative solution to be found in order for FZ houses to comply with NCC. Better still, NCC should provide an alternative solution as a DTS option.

NCC Volume(s): ☐ One ☐ Two ☐ Three ☒ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: Table 10.8.3 Table Heading: Roof Pitch

Recommended change to draft:

Change to: "Angle between roof and ceiling"

Comment/reason for change:

To prevent houses that have a ceiling that is not parallel but is close to parallel to the roof plane from not providing enough ventilation. i.e. as it currently stands a 30° roof with a 29° ceiling would only need 7000mm2 not 20000mm2.

NCC Volume(s): ☐ One ☐ Two ☐ Three ☒ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: Table 10.8.4 Table Heading: Roof Pitch

Recommended change to draft:

Ventilation opening requirements for <10° skillion appear to be inconsistent with 10.8.4. Recommended change : Combine clauses 10.8.4 and 10.8.3 and remove inconsistency. Refer to previous submission about changing Table10.8.3 heading"Roof Pitch" to "Angle between roof and ceiling"

Comment/reason for change:

Consistency and clarity.

NCC Volume(s): ☐ One ☐ Two ☐ Three ☒ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: 10.8.1 Vapour permeance requirements. Explanatory information

Recommended change to draft:

Open-cell insulation, such as mineral wool or fibreglass, typically has a high vapour permeance, while closed-cell insulation such as polystyrene typically has a low vapour permeance. Many foil-faced insulation products have a low vapour permeance.

Comment/reason for change:

Additional notation with the above to promote outcome based on designed indoor conditions. If there are to be closed cell materials and membranes used, the indoor air extraction and replacement need to meet fresh air requirements that promote a low mould index.

Suggest linking designed outcome of both indoor environment and chosen external wall and roof construction together.

Response Sheet (for Energy Efficiency clauses)

Response(s)

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J1P1 Energy use and greenhouse gas emissions

Recommended change to draft:

It is recommended that J1P1 be amended as follows—

A building, other than a sole-occupancy unit of a Class 2 building or a Class 4 part of a building, including its services, must have features that ~~facilitate the efficient use of energy appropriate to—~~

(a) facilitate the efficient ~~near zero~~ use of energy and near net zero operational greenhouse gas emissions appropriate to—

(i) the function and use of the building; and

(ii) the level of human comfort required for the building use; and

~~(b) solar radiation being —~~

~~(i) utilised for heating; and~~

~~(ii) controlled to minimise energy for cooling; and (c) the energy source of the services; and~~

~~(d) the sealing of the building envelope against air leakage; and~~

~~(e)~~

(b) for the ~~a~~ conditioned space, to achieve an hourly regulated energy consumption and associated greenhouse gas emissions, averaged over the annual hours of operation, of not more than—

a. for a Class 6 building, 8040 kJ/m².hr and 4 g of CO2-e/m2 .hr; and

b. for a Class 5, 7b, 8 or 9a building other than a ward area, or a Class 9b school, ~~43~~22 kJ/m².hr and 2.2 g of CO2- e/m2 .hr; and

c. for all other building classifications, ~~15~~8 kJ/m².hr and 1 g of CO2-e/m2 .h

Comment/reason for change:

The performance requirement as currently drafted implies that the first of the two objectives is 'near zero' use of operational energy which is misleading. The building services will continue to efficiently use a considerable amount of energy, not 'near zero'. The 'near zero' objective relates to operational greenhouse gas emissions and the provision of on-site renewable energy to offset some or all of this energy use (whether this is mandated in NCC2025 J9D5, or if NCC2025 continues only to require features than facilitate the future provisions thereof.)

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J1P4

Recommended change to draft:

J1P4 Renewable energy and electric vehicle charging

(1) A building must have features that facilitate the future installation of—

(a) on-site renewable energy generation and storage equipment, except where on-site renewable energy generation equipment is already installed to the maximum practicable extent; and

(b) in a Class 2 building, electric vehicle charging equipment sufficient to serve the daily driving needs of all building occupants; and

(2) A Class 3 building or Class 5 to 9 building must contain electric vehicle charging equipment capable of serving at least 20% of the daily driving needs of all building occupants

Comment/reason for change:

General comment regarding 'on-site renewable energy generation'.

Exceeding the DTS wall -glazing building fabric performance requirements should be encouraged in conjunction with this PCD to disincentivise over specification of onsite renewables.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J1V3, Specification 34, Specification 49 (delete any that do not apply)

Recommended change to draft:

(1) (a) (i) the annual greenhouse gas emissions of the services of the proposed building are not more than ~~90% of~~ the annual greenhouse gas emissions of a reference building when….

Comment/reason for change:

An acceptable performance-based compliance solution is compared with a deemed-to-satisfy solution (Reference Building) to demonstrate compliance with the NCC, not 90% of a Reference Building. The reasoning given by the ABCB as to why this 90% figure has been introduced into the PCD is that the J1V1 NABERS and J1V2 Green Star pathways have something similar.

NABERS and Green Star are both best practice voluntary tools. Section J is not. Both NABERS and Green Star have valid reasons for including a buffer figure above a specific base standard. As a best practice tool, green star set standards 10% better than the minimum acceptable standard. Section J of the NCC on the other hand is the minimum acceptable standard. Introducing this 90% figure goes against the ABCB objective of encouraging the use of a J1V3 performance solution for building services.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J3D10 (4) Floors of a sole occupancy unit of a Class 2 building or a Class 4 part of a building

Recommended change to draft:

NSW J3D10(4)

(4) A concrete slab-on ground, other than ~~Except for~~ a waffle-pod slab, must be insulated in accordance with the following:—

(a) In climate zones 6 and 7—

(i) insulation with an R-Value of at least 0.64 must be installed around the vertical edge of its perimeter~~; and~~

(ii) insulation with an R-Value of at least 0.64 must be installed underneath the slab; and.

(b) In climate zone 8—

(i) insulation with an R-Value of at least 1.0 must be installed around the vertical edge of its perimeter; and

(ii) insulation with an R-Value of at least 2.0 must be installed underneath the slab.

(5) Insulation required by (3), (4)(a)(i) and (4)(b)(i) must—

(a) be waterproof ~~resistant~~ installed with water control away from the structure; and

(b) be continuous from the adjacent finished ground level—

(i) to a depth of not less than 300 mm and the entire length covered by an impermeable waterproof membrane and non-combustible fibre-cement sheeting to the exterior ; or

(ii) for at least the full depth of the vertical edge of the concrete slab-on-ground.

Comment/reason for change:

General comment:

All slabs on ground in these locations may be at risk of climate hazards, particularly flooding which may cause the junction between the insulation and concrete slab to pool water causing an erosion of structural steel and reinforcement.

Suggest that a hygrothermal analysis is required with any installation of insulation to the slab. Including but not limited to a corrosion analysis of the structural members. The corrosion index from the analysis should accompany clauses in both the structural and meet climate resilience of future weather files until 2050.

Water should be controlled away from the structure above and below ground so that water cannot become stationary in interstitial layers of the construction, waterproof impermeable membrane of slab edge insulation. The upper edge of the insulation should be chamfered horizontally at no less than 5 degrees away from the building to increase water control away from the building structure.

An explanatory diagram should be included to indicate the control of water around this construction junction.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J4D3 (4) NSW J4D3 + Specification 36 Material Properties S36C2 (2)(b)

Recommended change to draft:

(4) Roof, ceiling, wall and floor materials, and associated surfaces are ~~deemed to have the thermal properties listed in Specification 36~~

(i) Deemed to have the thermal properties listed in Specification 36, and

(ii) Where climate resilience is proven through the specification of continuous biogenic external and bulk insulation(s) and are not listed in Specification 36 the materials maybe assessed using the methodology in S36C2(2)(b) provided the certifying authority accepts the manufacturers Australian testing certification with $Wm^{-1}K^{-1}$

Comment/reason for change:

General comment:

The J4D3 Thermal construction – general PCD should provide voluntary incentives for using a non-reflective vapour barrier to reduce the climate risk of mould forming in the interstitial layers of construction due to water ingress. NSW is considerably more prone to condensation due to increasing humidity and inability for the construction to dry out in time.

Including a clause description for additional continuous external layers of biogenic insulation with a class 4 vapour barrier will similarly reduce the future climate hazard from extreme heat and cool. Biogenic fossil fuel free materials are emerging in the market already and a methodology for consistent calculation should be adopted in the 2025 code amendments.

Recommendation to update S36C2 to include emerging insulation and external continuous sheathing where climate resilience for future 2050 weather files can be supported through energy modelling. 2050 climate files for resilience should meet the equivalent Green Star thermal comfort PMV range.

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J4D6, , Tables J4D6b and J4D6c

Recommended change to draft:

Leave the tabulated solar admittance values from NCC2022 unchanged.

Comment/reason for change:

Although it varies by climate zone and building class, in many cases the proposed changes to the tabulated solar admittance values will halve or almost halve the permissible window areas allowed given a specific orientation, glazing SHGC value and external shading device. This has the potential to be detrimental to occupant amenity (reduced daylighting due to reduced window area and/or lower light transmission glazing, reduced opportunity for visual connection to the exterior, reduced opportunity for beneficial winter passive heating which is particularly important for residential building types in cold to warm Australian climate zones.)

NCC Volume(s): ☒ One ☐ Two ☐ Three ☐ Housing Provisions ☐ Livable Housing Design Standard

Clause/Figure/Table: J6D10

Recommended change to draft:

Recommend removing all gas options for this PCD based on state/territory energy transition plans for new buildings.

Comment/reason for change:

Where available in state and territory energy transition plans, the National Construction Code needs to support decarbonisation of the grid by making gas in new buildings harder to specify.
