

Part H1 Structure

Introduction to this Part

This Part focuses on safeguarding people from injury caused by structural failure, loss of *amenity* caused by structural behaviour (deflections, creep, vibration, settlement and the like), protection of other property from physical damage caused by structural failure and safeguarding people from injury that may be caused by failure of, or impact with, glazing.

Objectives

H101 Objective

The Objective is to—

- (a) safeguard people from injury caused by structural failure; and
- (b) safeguard people from loss of *amenity* caused by structural behaviour; and
- (c) protect *other property* from physical damage caused by structural failure; and
- (d) safeguard people from injury that may be caused by failure of, or impact with, glazing.

Functional Statements

H1F1 Functional Statements

- (1) A building or structure is to withstand the combination of loads and other actions to which it may be reasonably subjected.
- (2) Glazing is to be installed in a building to avoid undue risk of injury to people.

Performance Requirements

H1P1 Structural reliability and resistance

- (1) By resisting the actions to which it may reasonably be expected to be subjected, a building or structure, during construction and use, with appropriate ~~degrees~~ levels of reliability, must—
 - (a) perform adequately under all reasonably expected design actions; and
 - (b) withstand extreme or frequently repeated design actions; and
 - (c) be designed to sustain local damage, with the structural system as a remaining stable and not being damaged to an extent disproportionate to the original local damage; and
 - (d) avoid causing damage to *other properties*.
- (2) Each component of the building or structure must withstand all actions with the minimum levels of reliability specified in Tables H1P1a, H1P1b and H1P1c and determined in accordance with H1V1.
- ~~(2)~~(3) The actions to be considered to satisfy (1) and (2) include but are not limited to—
 - (a) permanent actions (dead loads); and
 - (b) imposed actions (live loads arising from occupancy and use); and
 - (c) wind action; and

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- (d) earthquake action; and
 - (e) snow action; and
 - (f) liquid pressure action; and
 - (g) ground water action; and
 - (h) rainwater action (including ponding action); and
 - (i) earth pressure action; and
 - (j) differential movement; and
 - (k) time dependent effects (including creep and shrinkage); and
 - (l) thermal effects; and
 - (m) ground movement caused by—
 - (i) swelling, shrinkage or freezing of the subsoil; and
 - (ii) landslip or subsidence; and
 - (iii) siteworks associated with the building or structure; and
 - (n) *construction activity actions*; and
 - (o) termite actions.
- ~~(3)~~(4) The structural resistance of materials and forms of construction must be determined using material properties with appropriate allowance for type and use of the material and the degree of accuracy inherent in the methods used to assess the structural behaviour. ~~five percentile characteristic material properties with appropriate allowance for—~~
- ~~(+)—known construction activities; and~~
 - ~~(+)—type of material; and~~
 - ~~(+)—characteristics of the site; and~~
 - ~~(+)—the degree of accuracy inherent in the methods used to assess the structural behaviour; and~~
 - ~~(+)—action effects arising from the differential settlement of foundations, and from restrained dimensional changes due to temperature, moisture, shrinkage, creep and similar effects.~~
- ~~(9)~~(5) Glass installations that are at risk of being subjected to human impact must have glazing that—
- (a) if broken on impact, will break in a way that is not likely to cause injury to people; and
 - (b) resists a reasonably foreseeable human impact without breaking; and
 - (c) is protected or marked in a way that will reduce the likelihood of human impact.

Notes

When assessing compliance with H1P1(3)(a) to (e), the actions must include those derived from the relevant part of the AS/NZS 1170 series of Standards.

Table H1P1a: Minimum annual reliability indices (β) for additive load combinations (gravity actions only)

All Importance Levels

$\beta = 4.30$

Table Notes

- (1) The annual reliability indices in Table H1P1a must be met for all components necessary to comply with H1P1(1) at the relevant Importance Level.
- (2) Ancillary components may have a reliability index appropriate to the component, but not less than that required for Importance Level 1, irrespective of the Importance Level of the whole building or structure.
- ~~(1)~~(3) Importance Level must be assigned in accordance with Table 2.2.3a of the ABCB Housing Provisions.

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Table H1P1b: Minimum annual reliability indices (β) for additive load combinations (combined gravity and other actions)

Importance Level 1	Importance Level 2
$\beta = 3.45$	$\beta = 3.70$

Table Notes

- (1) The annual reliability indices in Table H1P1b must be met for all components necessary to comply with H1P1(1) at the relevant Importance Level.
- (2) Ancillary components may have a reliability index appropriate to the component, but not less than that required for Importance Level 1, irrespective of the Importance Level of the whole building or structure.
- ~~(2)~~(3) Importance Level must be assigned in accordance with Table 2.2.3a of the ABCB Housing Provisions.

Table H1P1c: Minimum annual reliability indices (β) for action reversal and stability load combinations (combined gravity and other actions)

Importance Level 1	Importance Level 2
$\beta = 3.00$	$\beta = 3.35$

Table Notes

- (1) The annual reliability indices in Table H1P1c must be met for all components necessary to comply with H1P1(1) at the relevant Importance Level.
- (2) Ancillary components may have a reliability index appropriate to the component, but not less than that required for Importance Level 1, irrespective of the Importance Level of the whole building or structure.
- (3) Importance Level must be assigned in accordance with Table 2.2.3a of the ABCB Housing Provisions.

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Explanatory Information

Structural reliability in terms of failure and behaviour is considered for each component (beams, columns, struts, ties, slabs, etc.) and for the structure as a whole. The *Performance Requirements* for components are prescribed as minimum reliability indices for combinations of loads and building importance. H1P1(1) requires that the structure as a whole achieves levels of reliability that take into account material properties, the nature of imposed actions, failure modes, building use, serviceability requirements and occupant vulnerability which may require that components have higher levels of reliability than those specified in Tables H1P1a, H1P1b and H1P1c. For further guidance refer to ABCB Handbook – Structural Reliability Verification Method.

The actions imposed by gravity, wind, snow and earthquake loads are set out in AS/NZS 1170 Parts 1 to 4. The reliability indices in Table H1P1a, H1P1b and H1P1c are derived from load combinations based on AS/NZS 1170 and are a weighted average of indices for individual load combinations and components derived from various provisions in the below listed Australian Standards. These standards set the minimum structural requirements for timber, concrete, masonry and steel components for structural design:

- AS 1720 Timber structures.
- AS 3600 Concrete structures.
- AS 3700 Masonry structures.
- AS 4100 Steel structures.
- AS/NZS 4600 Cold-formed steel structures.

These standards apply to many types of structures, including buildings, and were adopted as the requirement for building structures in the BCA in 1989. As existing requirements they are classified as *Deemed-to-Satisfy Solutions* from BCA 1996 onwards. They remain the principal minimum requirements for timber, concrete, masonry and steel components in buildings for both *Performance Solutions* and *Deemed-to-Satisfy Solutions*. By retaining them as *Deemed-to-Satisfy Solutions* they can be applied without the need for a *performance-based design brief*.

The derived reliability indices in Tables H1P1a, H1P1b and H1P1c give a consistent base for assessing components of building structures made from materials other than materials in clauses 2.2.4(d), and 2.2.4(g) to (k) of the ABCB Housing Provisions or for components using these materials in a way not covered by these standards.

A2G2(6) requires that components made from materials included in clauses 2.2.4(d) and 2.2.4(g) to (k) of the ABCB Housing Provisions be assessed as part of a *Deemed-to-Satisfy Solution* using clauses 2.2.3 and 2.2.4 of the ABCB Housing Provisions, or as part of a *Performance Solution* utilising comparison with *Deemed-to-Satisfy Provisions* clauses 2.2.3 and 2.2.4 of the ABCB Housing Provisions.

Explanatory Information: Interpretation of probability

Annual probability of failure (P_F) can be derived from the reliability index (β) where $\beta = -\phi^{-1}(P_F)$ where ϕ^{-1} is the inverse standardised normal distribution. Approximate equivalent probabilities of failure to the reliability indices in Tables H1P1a, H1P1b and H1P1c are contained in Table H1P1 (explanatory).

Values in Table H1P1 (explanatory) are notional, accounting for uncertainties in design parameters but excluding accidents and gross human errors.

For further guidance refer to ABCB Handbook – Structural Reliability Verification Method.

Table H1P1 (explanatory): Equivalent probabilities of failure

Additive load combination (gravity actions only)	Additive load combinations (combined gravity and other actions)		Action reversal and stability load combinations (combined gravity and other actions)	
	Importance Level 1	Importance Level 2	Importance Level 1	Importance Level 2
All importance Levels $P_F = 1/117,000$ per year	Importance Level 1 $P_F = 1/3,500$ per year	Importance Level 2 $P_F = 1/9,200$ per year	Importance Level 1 $P_F = 1/700$ per year	Importance Level 2 $P_F = 1/2,400$ per year

Limitations

H1P2 only applies to a Class 1 building.

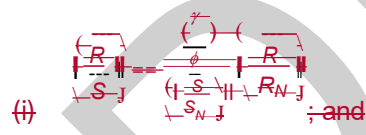
QLD H1P3

Verification Methods

H1V1 Structural reliability of components

- (1) This *Verification Method* is ~~only~~ applicable to components with a resistance coefficient of variation of ~~at least 10% and~~ not more than 40%.
- (2) ~~For components with a~~ Where the calculated resistance coefficient of variation value is less than 10%, then a minimum value of 10% should be used.
- (3) The resistance model for the component must be established by taking into account variability due to material properties, fabrication and construction processes, structural modelling and time dependent effects.
- ~~(2)~~(4) Annual action models must be determined for all reasonably expected actions and combinations of actions in accordance with Table H1V1a.
- ~~(3)~~(5) Compliance with H1P1(1), (2) and (3) is verified for the design of a structural component for strength when where—
 - (a) the ~~capacity reduction factor~~ ϕ satisfies ~~$\phi = S \text{ Average}(\phi_G, \phi_Q, \phi_W, \dots)$, where $\phi_G, \phi_Q, \phi_W, \dots$ are capacity reduction factors for all relevant actions and must contain at least permanent (G), imposed (Q) and wind (W) actions; and~~
 - (b) the ~~capacity reduction factors~~ $\phi_G, \phi_Q, \phi_W, \dots$ are calculated for target reliability indices for permanent action β_{TG} ;

for imposed action β_{TQ} , for wind action β_{TW} in accordance with the equation:
$$\beta = \ln \left[\frac{\bar{R}}{S} \sqrt{\frac{C_S}{C_R}} \right] \sqrt{\ln(C_R C_S)}$$



(i)
$$C_R = 1 + V_R^2$$

(ii)
$$C_S = 1 + V_S^2$$
, where—

- (A) $\frac{\bar{R}}{R_N}$ = ratio of mean resistance to nominal; and
- (B) $\frac{\bar{S}}{S_N}$ = ratio of mean action to nominal; and
- (C) C_S = correction factor for action; and
- (D) C_R = correction factor for resistance; and
- (E) V_S = coefficient of variation of the appropriate action as given in Table H1V1a; and
- (F) V_R = coefficient of variation of the resistance; and
- (G) γ = appropriate load factor as given in AS/NZS 1170.0; and
- (H) ϕ = capacity factor for the appropriate action; and

~~(c) the annual target reliability indices β_{TG} , β_{TQ} and β_{TW} are defined as follows:~~

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- ~~(i) For situations where it is appropriate to compare with an equivalent Deemed to Satisfy product, a resistance model must be established for the equivalent Deemed to Satisfy product and β_{TG} , β_{TQ} , β_{TW} must be~~

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calculated for the equivalent Deemed-to-Satisfy product in accordance with the equation given at (b).

- (ii) The target reliability indices $\beta_{TG}, \beta_{TQ}, \beta_{TW}, \dots$ thus established, must be not less than those given in Table H1V1b minus 0.5.
- (iii) For situations where it is not appropriate to compare with an equivalent Deemed-to-Satisfy product, the target reliability index β must be as given in Table H1V1b.

(4) The resistance model for the component must be established by taking into account variability due to material properties, fabrication and construction processes and structural modelling.

Table H1V1a: Annual action models

Design action	Ratio of mean action to nominal	Coefficient of variation of the action
Permanent action ($\gamma_G = 1.35$)	$(G/G_N) = 1.00$	$V_G = 0.10$
Imposed action ($\gamma_Q = 1.50$)	$(Q/Q_N) = 0.50$	$V_Q = 0.43$
Wind action ($\gamma_W = 1.00$) (Non-cyclonic)	$(W/W_N) = 0.16$	$V_W = 0.49$
Wind action ($\gamma_W = 1.00$) (Cyclonic)	$(W/W_N) = 0.16$	$V_W = 0.71$
Snow action ($\gamma_S = 1.00$)	$(S/S_N) = 0.29$	$V_S = 0.57$
Earthquake action ($\gamma_E = 1.00$)	$(E/E_N) = 0.05$	$V_E = 1.98$

Table H1V1b: Annual target reliability indices (β)

Type of action	Target reliability index β
Permanent action	4.3
Imposed action	4.0
Wind, snow and earthquake action	3.7

Table Notes

- (1) Table H1V1b is applicable for components that exhibit brittle failure similar to concrete as specified in AS 3600.
- (2) For components with creep characteristics similar to timber as specified in AS 1720.1, the target reliability index for permanent action shall be increased to 5.0.
- (3) The above target reliability indices are based on materials or systems that exhibit creep or brittle failure characteristics similar to timber and concrete.
- (4) Table H1V1b may also be applicable to materials or systems that exhibit creep or brittle failure differently to steel, timber or concrete provided that the creep and/or brittle nature of the material or system are properly accounted for in the design model.
- (5) The above target reliability indices are also applicable for materials or systems that exhibit ductile failure characteristics.

(a) the calculated reliability index β is not less than the applicable *required* values.

(b) the reliability index β is calculated in accordance with the equation: $\beta = \frac{\ln\left(\frac{\bar{R}}{\bar{S}}\sqrt{\frac{C_S}{C_R}}\right)}{\sqrt{\ln(C_S C_R)}}$, where—

- (i) $C_R = 1 + V_R^2$; and
- (ii) $C_S = 1 + V_S^2$, where, subject to (iii)—
 - (A) \bar{R} = mean resistance; and
 - (B) \bar{S} = mean action; and
 - (C) V_S = coefficient of variation of the action; and

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- (D) V_R = coefficient of variation of the resistance; and
- (iii) where the load action S is due to the combination of multiple structural actions—
- (A) $S = S_1 + S_2 + \dots + S_{n,i}$; and
- (B) the mean of the combined load action is calculated in accordance with the equation: $\bar{S} = \bar{S}_1 + \bar{S}_2 + \dots + \bar{S}_{n,i}$, where \bar{S}_i is the mean of the i th action S_i ; and
- (C) the standard deviation of the combined load action is calculated in accordance with the equation: $\sigma_s^2 = \sigma_{s1}^2 + \sigma_{s2}^2 + \dots + \sigma_{sn,i}^2$, where σ_{si} is the standard deviation of the i th action S_i ; and
- (D) the coefficient of the variation of the combined action S is calculated in accordance with the equation:
- $$V_S = \frac{\sigma_s}{\bar{S}}$$

Table H1V1a: Annual action models

Design action	Ratio of mean action to nominal	Coefficient of variation of the action
Permanent action	1.05	0.10
Annual maximum imposed action	0.35	0.45
Arbitrary-point-in-time imposed action	0.25	0.78
Wind (non-cyclonic regions, Importance Level 1)	0.37	0.47
Wind (non-cyclonic regions, Importance Level 2)	0.31	0.47
Wind (cyclonic regions, Importance Level 1)	0.19	0.76
Wind (cyclonic regions, Importance Level 2)	0.16	0.76
Earthquake (Importance Level 1)	0.28	0.90
Earthquake (Importance Level 2)	0.15	0.90
Snow	0.29	0.57

Table Notes

- (1) Actions not listed must be considered and derived on a case-by-case basis.
- (2) Nominal loads are based on the AS/NZS 1170 series of standards.

Notes

When determining appropriate combinations of actions to meet the requirements of H1V1(5)(b)(iii), consideration must be made for those given in AS/NZS 1170.

H1V1 may be used for all materials and actions to determine compliance with H1P1(2).

H1V2 Structural robustness

- (1) Compliance with H1P1(1)(c) is verified for structural robustness if (2) and (3) are complied with.
- (2) The structure is assessed such that the building remains stable and the resulting collapse does not extend further than the immediately adjacent storeys upon the notional removal in isolation of—
- any supporting column; or
 - any beam supporting one or more columns; or
 - any segment of a load bearing wall of length equal to the height of the wall.

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WA H1D7

H1D7 Roof and wall cladding

- (1) Diagrams depicting relevant roofing and supporting members and associated terminology used to describe them are set out in [Figure H1D7a](#) and [Figure H1D7b](#).
- (2) *Performance Requirement H1P1* is satisfied for sheet roofing if it complies with one or a combination of the following:
 - (a) Metal roofing:
 - (i) AS 1562.1; and
 - (ii) in wind regions [B2](#), C and D in accordance with Figure 2.2.3 in Section 2 of the ABCB Housing Provisions (cyclonic areas), metal roof assemblies, their connections and immediate supporting members must be capable of remaining in position notwithstanding any permanent distortion, fracture or damage that might occur in the sheet or fastenings under the pressure sequences A to G defined in [Table H1D7](#).
 - (b) Plastic sheet roofing: AS 1562.3.
 - (c) Metal sheet roofing: Part 7.2 of the ABCB Housing Provisions, provided the building is located in an area with a wind class of not more than N3.
- (3) *Performance Requirement H1P1* is satisfied for roof cladding if it complies with one or a combination of the following:
 - (a) Terracotta, fibre-cement and timber slates and shingles: AS 4597.
 - (b) For roof tiles—
 - (i) AS 2050; or
 - (ii) Part 7.3 of the ABCB Housing Provisions, provided—
 - (A) the building is located in an area with a wind class of not more than N3; and
 - (B) the roof tiles comply with AS 2049; and
 - (C) the roof has a pitch of not less than 15 degrees and not more than 35 degrees.
- (4) *Performance Requirement H1P1* is satisfied for timber and composite wall cladding if it is designed and constructed in accordance with—
 - (a) for autoclaved aerated concrete wall cladding, AS 5146.1; or
 - (b) for wall cladding, Part 7.5 of the ABCB Housing Provisions.
- (5) *Performance Requirement H1P1* is satisfied for a metal wall cladding if it is designed and constructed in accordance with AS 1562.1.

Table H1D7: Low-High-Low pressure sequence

Sequence	Number of cycles	Load
A	4500	0 to 0.45 Pt
B	600	0 to 0.6 Pt
C	80	0 to 0.8 Pt
D	1	0 to 1.0 Pt
E	80	0 to 0.8 Pt
F	600	0 to 0.6 Pt
G	4500	0 to 0.45 Pt

Table Notes

- (1) Pt is the ultimate limit state wind pressure on internal and external surfaces as determined in accordance with AS/NZS 1170.2, modified by an appropriate factor for variability, as determined in accordance with Table B1 of AS/NZS 1170.0.
- (2) The rate of load cycling must be less than 3 Hz.
- (3) The single load cycle (sequence D) must be held for a maximum of 10 seconds.

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Figure H1D7a: Section of a typical sheet roof

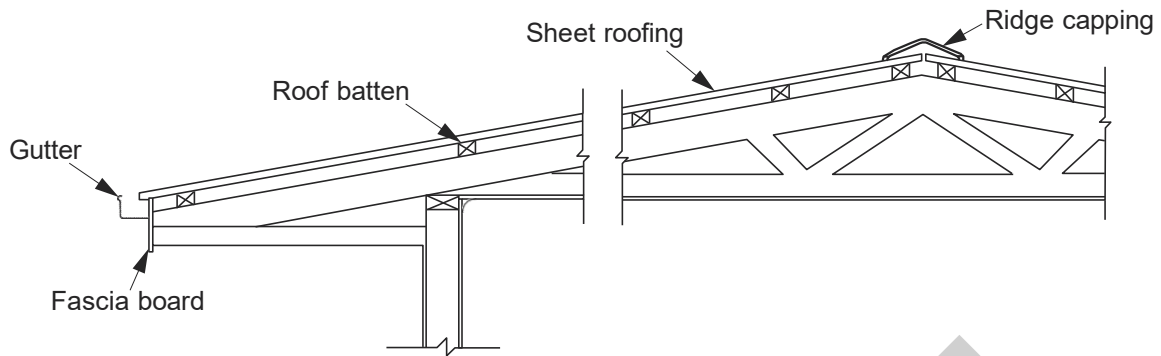
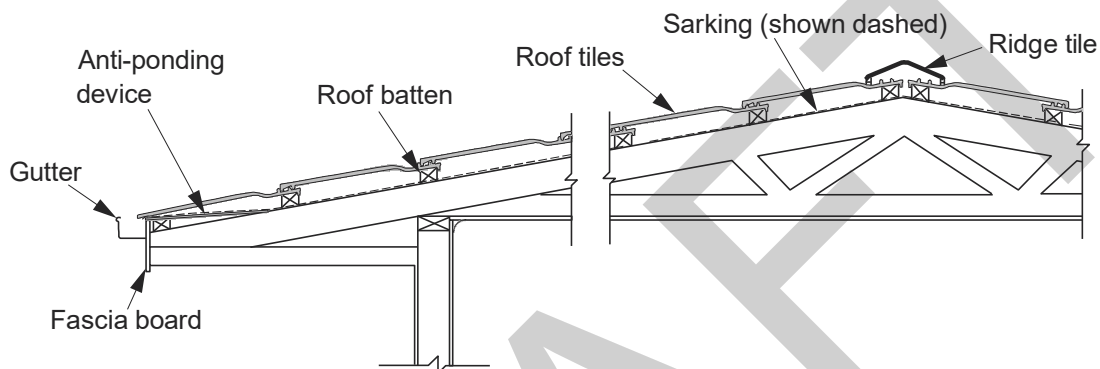


Figure H1D7b: Section of a typical tile roof



Explanatory Information

The requirements of H1D7(2)(a)(ii) must be read in conjunction with the provisions of AS/NZS 1170.2. The ABCB commissioned research to establish a nationally consistent testing regime for metal roof cladding assemblies in cyclonic areas. The results of this research are contained in H1D7(2)(a)(ii).

Low cycle fatigue cracking of metal roof cladding elements during tropical cyclones is a complex process where small changes in load, geometry or material properties can significantly affect the fatigue performance of the cladding system (includes immediate supports, fixings and cladding). The consequences of failure of an element can quickly lead to more elements progressively failing. These failed elements become wind driven debris and so pose a threat to people and other structures as potential missiles.

If a system does not successfully resist the fatigue loading sequence in Table H1D7, it does not comply. The test section consists of cladding elements, fastenings and immediate supporting members assembled together in a manner identical to those parts of the particular roof which the test section is intended to replicate.

H1D8 Glazing

- (1) *Performance Requirement H1P1* is satisfied for glazing and *windows* if they are—
- (a) designed and constructed in accordance with AS 2047 for glazed assemblies in an *external wall* including—
 - (i) *windows*, other than those listed in (2); and
 - (ii) sliding and swinging glazed doors with a frame, including French and bi-fold doors with a frame; and
 - (iii) adjustable louvres; and
 - (iv) *window* walls with one-piece framing; and
 - (b) installed such that they comply with—
 - (i) AS 2047; and
 - (ii) Part 8.2 of the ABCB Housing Provisions, provided that they are—

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- (A) in buildings that are within the geometric limits set out in clause 1.2 of AS 4055; and
- (B) located in an area with a wind class of not more than N3.
- (2) *Performance Requirement H1P1* is satisfied for glazing in glazed assemblies if it—
- (a) complies with Part 8.3 of the ABCB Housing Provisions; or
 - (b) is designed and constructed in accordance with AS 1288 for all glazed assemblies not covered by (1) and the following glazed assemblies:
 - (i) All glazed assemblies not in an *external wall*.
 - (ii) Revolving doors.
 - (iii) Fixed louvres.
 - (iv) Skylights, roof lights and *windows* other than in the vertical plane.
 - (v) Sliding and swinging doors without a frame.
 - (vi) *Windows* constructed on-site and architectural one-off *windows*, which are not design tested in accordance with AS 2047.
 - (vii) Second-hand *windows*, re-used *windows* and recycled *windows*.
 - (viii) Heritage *windows*.
 - (ix) Glazing used in balustrades and overhead glazing.
- (3) *Performance Requirement H1P1*(45) is satisfied for glazed assemblies at risk of human impact if they—
- (a) are designed, constructed and installed in accordance with—
 - (i) for glass, AS 1288; and
 - (ii) for *windows*, AS 2047; or
 - (b) comply with Part 8.4 of the ABCB Housing Provisions.

Explanatory Information: AS 2047

- AS 2047 specifies requirements for the design, testing and manufacture of *windows*. The reference to *windows* in AS 2047 includes certain types of louvres and glazed doors that may be sliding, swinging, French or bi-fold doors.
- AS 2047 does not cover assemblies that are internal or revolving doors, fixed louvres, skylights, rooflights and *windows* not installed in the vertical plane, *windows* in greenhouses or horticultural buildings, frameless sliding or swinging doors, *windows* constructed on site, one-off untested architectural designed *windows*, second-hand, recycled or reused *windows* and heritage *windows* defined by relevant State and Territory authorities.

Explanatory Information: AS 1288

In relation to building work covered by NCC Volume Two and the ABCB Housing Provisions, AS 1288 does not cover the selection and installation of glass for *windows* and doors in heritage buildings, restoration or repairs to leadlights, glass blocks, bricks or pavers.

Explanatory Information: AS 4055

Clause 1.2 of AS 4055 sets out geometric limitations that include the following:

- The distance from the ground level adjacent to the building to the underside of eaves is not to exceed 6.0 m.
- The distance from the ground level of the building to the highest point of the roof, excluding chimneys is not to exceed 8.5 m.
- The width of the building, including verandas, but excluding eaves, is not to exceed 16.0 m.
- The length of the building is not to exceed five times its width.
- The roof pitch is not to exceed 35°.

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NT H2P4

H2P4 Drainage from swimming pools

A *swimming pool* must have adequate means of draining the pool in a manner which will not—

- (a) cause illness to people; or
- (b) affect *other property*.

Notes

~~The NCC Volume Two and the ABCB Housing Provisions do not contain any Deemed-to-Satisfy Provisions for this Performance Requirement.~~

Verification Methods

H2V1 Weatherproofing

- (1) Compliance with H2P2 for weatherproofing of an *external wall* is verified when—
 - (a) a prototype passes the procedure described in (2); and
 - (b) the *external wall*—
 - (i) has a risk score of 20 or less, when the sum of all risk factor scores are determined in accordance with Table H2V1a; and
 - (ii) is not subjected to an ultimate limit state wind pressure of more than 2.5 kPa; and
 - (iii) includes only *windows* that comply with AS 2047.
- (2) The test procedure referred to in (1)(a) must be as follows:
 - (a) The test specimen is in accordance with the requirements of (3).
 - (b) The test procedure is in accordance with the requirements of (4) and (5) as appropriate.
 - (c) The test specimen does not fail the criteria in (6).
 - (d) The test is recorded in accordance with the requirements of (7).
- (3) Test specimen: The test specimen must incorporate—
 - (a) representative samples of openings and joints, including—
 - (i) vertical and horizontal control joints; and
 - (ii) wall junctions; and
 - (iii) *windows* or doors; and
 - (iv) electrical boxes; and
 - (v) balcony drainage and parapet flashings; and
 - (vi) footer and header termination systems; and
 - (b) for a *cavity wall*—
 - (i) a transparent material for a proportion of the internal wall lining (to provide an unobstructed view of the *external wall* cladding) with sufficient structural capability and similar air tightness to resist the applied wind pressures; and
 - (ii) a 15 mm diameter hole in the internal wall lining below a *window*.
- (4) The test procedure for a *direct fix cladding wall* or *unique wall* must be as follows:
 - (a) Apply 100% positive and negative serviceability wind pressures to the external face of the test specimen for a period of not less than 1 minute each.

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Risk factor	Category	Risk severity	Score
	by roof		
	Timber slat deck attached at first or second floor level	Medium	2
	Balcony exposed in plan view at first floor level	High	4
	Balcony cantilevered at first floor level	High	4
	Balcony exposed in plan view at second floor level or above	Very high	6
	Balcony cantilevered at second floor level or above	Very high	6

Table Notes

- (1) Eaves width is measured horizontally from the external face of any wall cladding to the outer edge of any overhang, including fascia and external gutters.
- (2) Barriers to prevent falling and parapets are considered as 0 mm eaves.

Table H2V1b: Serviceability wind pressure

Stage number	Serviceability wind pressure
1	15% to 30%
2	20% to 40%
3	30% to 60%

Explanatory Information

H2V1 contains the same test procedures, compliance criteria and reporting of test results that are contained in F3V1, in NCC Volume One. Consequently the Guide to NCC Volume One contains detailed and supportive explanatory information that is also relevant to H2V1.

Deemed-to-Satisfy Provisions

H2D1 Deemed-to-Satisfy Provisions

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements H2P1 to H2P34* are satisfied by complying with H2D2 to H2D8.
- ~~(2) Performance Requirement H2P4 must be complied with.~~
- ~~(3)~~(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

Notes

~~There are no Deemed-to-Satisfy Provisions for H2P4.~~

H2D2 Drainage

- (1) *Performance Requirement H2P1* is satisfied for drainage if it is designed and constructed in accordance with —

Class 1 and 10 buildings

- (a) AS/NZS 3500.3; or
- (b) provided the stormwater drainage system otherwise complies with (a), Part 3.3 of the ABCB Housing Provisions for drainage of—
- (i) roofs in areas subject to 5 minute duration rainfall intensities of not more than 255 mm per hour over an *annual exceedance probability* of 5% (as per Table 7.4.3d of the ABCB Housing Provisions) where a drainage system is *required*; and
 - (ii) sub-soil areas where excessive soil moisture problems may occur; and
 - (iii) land adjoining and under buildings.
- ~~(iv)~~ (2) Performance Requirement H2P4 is satisfied for swimming pool drainage if the swimming pool's pumped discharge is connected to the sanitary drainage system in accordance with AS/NZS 3500.2.

Explanatory Information

- The NCC does not require the installation of drainage systems. Accordingly these requirements need only be applied when these systems are used.
- Information on the need for drainage systems may be obtained from the *appropriate authority*.
- The legal discharge point from a building *site* is generally determined by local government authorities.

H2D3 Footings and slabs

Performance Requirement H2P3 is satisfied for footings and slabs if they are installed in accordance with H1D4(1)(a) or (b).

H2D4 Masonry

(1) H2D4(2)—

- (a) applies to every *external wall* (including the junction between the wall and any *window* or door) of a Class 1 building; and
- (b) does not apply to any Class 10 building except where its construction contributes to the weatherproofing of the Class 1 building.

SA H2D4(2)

(2) *Performance Requirements H2P2* and *H2P3* are satisfied for weatherproofing of masonry if it is carried out in accordance with the appropriate provisions of one of the following:

- (a) AS 3700.
- (b) AS 4773.1 and AS 4773.2.
- (c) Part 5.7 of the ABCB Housing Provisions provided masonry walls are constructed in accordance with H1D5 and the requirements of Part 5.7.

SA H2D4(3)

SA H2D4(4)

H2D5 Subfloor ventilation

Performance Requirement H2P3 is satisfied for subfloor ventilation if it is in accordance with Part 6.2 of the ABCB Housing Provisions.

Explanatory Information

Part 6.2 applies to the subfloor space of all suspended floors of a building or deck, including but not limited to, timber and steel-framed subfloors and suspended concrete slabs.

Class 1 and 10 buildings

Column 1 (Location)	Column 2 (Heat flux [kW/m ²])
6 m	20
12 m	10

Deemed-to-Satisfy Provisions

H3D1 Deemed-to-Satisfy Provisions

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* H3P1 and H3P2 are satisfied by complying with H3D2 to H3D67.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

H3D2 Fire hazard properties and non-combustible building elements

- (1) The following materials, though *combustible* or containing *combustible* fibres, may be used wherever a *non-combustible* material is *required*:
 - (a) Plasterboard.
 - (b) Perforated gypsum lath with a normal paper finish.
 - (c) Fibrous-plaster sheet.
 - (d) Fibre-reinforced cement sheeting.
 - (e) Pre-finished metal sheeting having a *combustible* surface finish not exceeding 1 mm thick and where the *Spread-of-Flame Index* of the product is not more than 0.
 - (f) *Sarking-type materials* that do not exceed 1 mm in thickness and have a *Flammability Index* not greater than 5.
 - (g) Bonded laminated materials where—
 - (i) each lamina, including any core, is *non-combustible*; and
 - (ii) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and
 - (iii) the *Spread-of-Flame Index* and the *Smoke-Developed Index* of the bonded laminated material as a whole do not exceed 0 and 3 respectively.
- (2) The *fire hazard properties, and determination thereof*, of materials used in a Class 1 building, including floor or ceiling spaces common with a Class 10 building, must comply with the following:
 - (a) *Sarking-type materials* used in the roof must have a *Flammability Index* not greater than 5.
 - (b) Flexible ductwork used for the transfer of products initiating from a heat source that contains a flame must comply with the *fire hazard properties* set out in AS 4254.1.
 - ~~(b)~~(c) Where discovered by test, fire hazard properties must be determined by an Accredited Testing Laboratory.

Note

Until adoption of NCC 2028 determination need not be undertaken by an Accredited Testing Laboratory.

H3D3 Fire separation of external walls

Compliance with Part 9.2 of the ABCB Housing Provisions satisfies *Performance Requirement* H3P1 for fire separation of *external walls*.

H3D4 Fire protection of separating walls and floors

Compliance with Part 9.3 of the ABCB Housing Provisions satisfies *Performance Requirement H3P1* for fire protection of *separating walls* and floors.

NSW H3D5

H3D5 Fire separation of garage-top-dwellings

Compliance with Part 9.4 of the ABCB Housing Provisions satisfies *Performance Requirement H3P1* for fire separation of garage-top dwellings.

H3D6 Smoke alarms and evacuation lighting

- (1) Compliance with Part 9.5 of the ABCB Housing Provisions satisfies *Performance Requirement H3P2* for smoke alarms and evacuation lighting.
- (2) For the purposes of (1), a Class 1 building includes a Class 10a private garage located above or below the Class 1 building.

H3D7 Fire separation of roofed outdoor areas

Compliance with Part 9.6 of the ABCB Housing Provisions satisfies *Performance Requirement H3P1* for the fire separation of roofed outdoor areas.

Explanatory Information: Smoke alarms general requirements

Performance Requirement H3P2 and the *Deemed-to-Satisfy Provisions* of Part 9.5 of the ABCB Housing Provisions require *automatic* warning on the detection of smoke in buildings, so that occupants may be alerted to a fire in order to evacuate to a place of safety.

Explanatory Information: Different smoke alarm requirements for Class 1a and Class 1b buildings

Part 9.5 of the ABCB Housing Provisions specifies different smoke alarm requirements for Class 1a and Class 1b buildings. The main difference is that a Class 1b building is *required* to have a greater number of smoke alarms, i.e. smoke alarms must be installed in all bedrooms, and a system of lighting must be installed to assist evacuation. This is due to Class 1b buildings generally being used for more transient purposes and the occupants being less familiar with the building layout.

Explanatory Information: Smoke alarms complying with AS 3786

Clause 9.5.1(b) of the ABCB Housing Provisions requires a smoke alarm(s) to comply with AS 3786. AS 3786 contains the requirements for the design and performance of electrically operated smoke alarms containing both detection and alarm facilities. Types of smoke alarms prescribed in AS 3786 include photoelectric, ionisation or a combination of the two.

Explanatory Information: Smoke alarms to be connected to consumer mains source

Clause 9.5.1(c) of the ABCB Housing Provisions requires that a smoke alarm be connected to the consumer mains electricity source where a consumer mains source is supplied to the building. A smoke alarm complying with AS 3786, that is intended for connection to an external power source, is *required* to be provided with a secondary power source i.e. a source of power to supply the smoke alarm in the event that the primary power source is unavailable. Generally, the requirement is met by providing mains powered smoke alarms with a battery back-up.

Class 1 and 10 buildings

Explanatory Information: Cross-volume considerations

NCC Volume Three contains a number of *plumbing* and *drainage* provisions which are relevant to facilities. These include, but may not be limited to, the following:

- Access for maintenance of *plumbing* and *drainage*: Parts B1, B2, B3, C1 and C2.
- *Heated water* temperature control for facilities used for personal hygiene: Part B2.
- Installation of sanitary *plumbing* and *drainage* systems: Parts C1 and C2.

H4D6 Light

[2019: 3.8.4]

Compliance with Part 10.5 of the ABCB Housing Provisions satisfies *Performance Requirement H4P4* for lighting.

H4D7 Ventilation

[2019: 3.8.5]]

- (1) Except for an exhaust fan from a *sanitary compartment*, laundry, kitchen or bathroom, *Performance Requirement H4P5* is satisfied for a mechanical ventilation system if it is installed in accordance with AS 1668.2.
- (2) ~~Compliance with Part 10.6 of the ABCB Housing Provisions satisfies~~ *Performance Requirement H4P5* is satisfied for ventilation by compliance with—
 - (a) Part 10.6 of the ABCB Housing Provisions; or
 - (b) for natural ventilation, AS 1668.4.

H4D8 Sound insulation

[2019: 3.8.6]

Compliance with Part 10.7 of the ABCB Housing Provisions satisfies *Performance Requirement H4P6* for sound insulation.

TAS H4D9

H4D9 Condensation management

[2019: 3.8.7]

Compliance with Part 10.8 of the ABCB Housing Provisions satisfies *Performance Requirement H4P7* for *condensation* management.

Notes

From 1 May 2023 to 30 September 2023 P2.4.7, V2.4.7 and Part 3.8.7 of NCC 2019 Volume Two Amendment 1 may apply instead of H4P7, H4V5 and H4D9 of NCC 2022 Volume Two. From 1 October 2023 H4P7, H4V5 and H4D9 of NCC 2022 Volume Two applies.

Explanatory Information

The intent of these requirements is to assist in the mitigation of *condensation* within a building. The implementation of *condensation* management measures may not prevent *condensation* from occurring.

Introduction to this Part

This Part is intended to reduce the likelihood of people being injured when accessing or moving about a building. It does this by setting requirements for the construction of stairways and ramps, slip resistance, and the design and construction of barriers to prevent falls.

Objectives

H501 Objective

The Objective is to provide people with safe access to and within a building.

SA H502

Functional Statements

H5F1 Safety from falling

A building is to provide safe access for people to the services and facilities within.

SA H5F2

Performance Requirements

H5P1 Movement to and within a building

So that people can move safely to and within a building—

- (a) walking surfaces must have safe gradients; and
- (b) any stairway or ramp (other than a threshold ramp) must—
 - (i) have suitable handrails where necessary to assist and provide stability to people using the stairway or ramp; and
 - (ii) have suitable landings to avoid undue fatigue of users; and
 - (iii) be suitable for safe passage in relation to the nature, volume and frequency of likely usage; and
 - (iv) have slip-resistant walking surfaces on ramps, and on stairway treads or near the edge of the nosing.

H5P2 Fall prevention barriers

(1) A barrier must be provided where people could fall—

- (a) 1 m or more—
 - (i) from a floor or roof or through an opening (other than through an openable window) in the *external wall*; or
 - (ii) due to a sudden change of level within or associated with a building; or

Class 1 and 10 buildings

Explanatory Information

NCC Volume Two does not apply to buildings that are Importance Level 3, therefore this Importance Level is not included under (3).

Deemed-to-Satisfy Provisions

H7D1 Deemed-to-Satisfy provisions

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* H7P1 to H7P5 are satisfied by complying with H7D2 to H7D5.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.
- (3) If a *private bushfire shelter* is installed, it must comply with *Performance Requirement* H7P6.

Notes

There are no *Deemed-to-Satisfy Provisions* for H7P6.

NSW H7D2

H7D2 Swimming pools

NT H7D2(1)

QLD H7D2(1)

- (1) *Performance Requirement* H7P1 is satisfied for a *swimming pool* with a depth of water more than 300 mm and which is associated with a Class 1 building, if it has safety barriers installed in accordance with AS 1926.1 and AS 1926.2.

TAS H7D2(2)

- (2) *Performance Requirement* H7P2 is satisfied for a water recirculation system of a *swimming pool* with a depth of water more than 300 mm, if it complies with AS 1926.3.

SA H7D2(3)

SA H7D2(4)

SA H7D2(5)

Explanatory Information: Definition of 'swimming pool'

The NCC definition of *swimming pool* is specific in including a bathing or wading pool and a spa. The requirements of AS 1926.3 apply to all types of pools defined as *swimming pools* under the NCC, irrespective of the definition in the Standard.

Explanatory Information: Water recirculation systems

The *swimming pool* water recirculation system requirements seek to minimise the risk of entrapment or injury of people using the *swimming pool* and provide for the safe operation of skimmer boxes and outlet systems.

Explanatory Information: Additional requirements

Part 13.7 of the ABCB Housing Provisions contains requirements for *swimming pool* and spa pool heating and pumping. In specific circumstances, Part 13.7 requires a *swimming pool* or spa pool to have a cover to reduce evaporation and subsequent heat loss, and time switches to control the operation of the heater.

Class 1 and 10 buildings

In addition to the requirements of this Part, a *swimming pool* must comply with the structural requirements of other Parts of NCC Volume Two and the ABCB Housing Provisions. The structural requirements refer to the *swimming pool* being designed and constructed to withstand any combinations of loads and other actions to which it may reasonably be subjected and the structural resistance of the materials and forms of construction used in the *swimming pool*.

Explanatory Information: ~~Cross-volume considerations~~ **Swimming pool drainage**

Part C2 of NCC Volume Three and H2D2(2) sets out the requirements for pumped discharge from *swimming pools*.

H7D3 Construction in alpine areas

- (1) Compliance with Part 12.2 of the ABCB Housing Provisions satisfies *Performance Requirement H7P4* for buildings that are located in *alpine areas*
- (2) The *Deemed-to-Satisfy Provisions* of this Part apply in addition to other *Deemed-to-Satisfy Provisions* of NCC Volume Two and the ABCB Housing Provisions.
- (3) Where any *Deemed-to-Satisfy Provisions* are in conflict, the provisions of H7D3 take precedence.

NSW H7D4

H7D4 Construction in bushfire prone areas

- (1) The requirements of (2) only apply in a *designated bushfire prone area*.
- (2) *Performance Requirement H7P5* is satisfied for a Class 1 building, or a Class 10a building or deck associated with a Class 1 building, if it is constructed in accordance with—
 - (a) AS 3959; or
 - (b) NASH Standard – Steel Framed Construction in Bushfire Areas.

QLD H7D4(3)

SA H7D4(3)

H7D5 Heating appliances, fireplaces, chimneys and flues

Performance Requirement H7P3 is satisfied for a heating appliance if it is installed in accordance with—

- (a) for a domestic solid fuel burning appliance, AS/NZS 2918; or
- (b) for a heating appliance, Part 12.4 of the ABCB Housing Provisions.

Explanatory Information

H7D5 applies to three types of heating appliances and includes the following:

- Open fireplaces — where solid fuel such as timber or coals are burnt in an unenclosed compartment. The requirements in Part 12.4 of the ABCB Housing Provisions for open fireplaces relate to masonry or concrete construction for all parts including the hearth, external faces and walls forming the back and sides and chimney.
- Insert fireplaces — manufactured and assembled in factories and inserted into the openings of masonry fireplaces in a building. All insert fireplaces must be tested to AS/NZS 2918 and have closed fire compartments for the burning of solid fuels.
- Free standing heating appliances — manufactured and assembled in factories and installed in the building without being concealed by wall or floor elements. All free standing fireplaces must be tested to AS/NZS 2918 and are *required* to be positioned in a building that meets specific minimum distances from internal building elements.

The requirements of both H7D5(a) and Part 12.4 of the ABCB Housing Provisions are intended to ensure the construction or installation of heating appliances can withstand the temperatures they generate. The requirements also

Class 1 and 10 buildings

H8P1 Livable housing design

A Class 1a building must be provided with—

- (a) a continuous and step-free path to a dwelling entrance door from either—
 - (i) the pedestrian entry at the allotment boundary; or
 - (ii) an appurtenant Class 10a garage or carport; or
 - (iii) a car parking space provided for the exclusive use of the occupants of the dwelling; and
- (b) at least one level and step-free entrance door into the dwelling from the access path *required* by (a); and
- (c) internal doors and corridors on the ground or entrance level which facilitate unimpeded movement between spaces; and
- (d) a *sanitary compartment* that—
 - (i) facilitates independent access and use; and
 - (ii) is located on the ground or entry level; and
- (e) a shower that facilitates independent access and use; and
- (f) the walls of the *sanitary compartment* referred to in (d), the shower referred to in (e) and a bath (where installed, other than a freestanding bath) constructed so as to facilitate future installation of grabrails, or the like, in a way that minimises the removal of existing wall linings.

Exemptions

H8P1(a) need not be complied with if—

- (a) step-free access cannot be provided from an appurtenant Class 10a garage or carport or a car parking space provided for the exclusive use of the occupants of the dwelling; and
- (b) due to *site* conditions, there is no other suitable location on which to construct the access path.

Deemed-to-Satisfy Provisions

H8D1 Deemed-to-Satisfy Provisions

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement* H8P1 is satisfied by complying with H8D2.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3).

H8D2 Livable housing design

- (1) A Class 1a dwelling must comply with the ABCB Standard for Livable Housing Design.
- (2) Clause 1.1 of the ABCB Standard for Livable Housing Design need not be complied with if—
 - (a) step-free access via an appurtenant garage, carport or parking space in accordance with Clause 1.1(1)(b) or (c) is not provided; and
 - (b) one or more of the following conditions exist:
 - (i) The average slope of the ground on which the access path would be constructed exceeds a gradient of 1:14.
 - (ii) To provide an external step-free access path would necessitate construction of ramping that exceeds the length and gradient allowed by Clause 1.1(4).

Class 1 and 10 buildings

- (iii) There is insufficient space available on the *site* on which to construct a step-free access path complying with Clause 1.1.
 - (iv) Subject to (3), the difference in level, measured vertically from the pedestrian entry at the allotment boundary or parking space to the floor level at the entrance door on the nearest floor containing *habitable rooms*, would necessitate construction of ramping that exceeds the length and gradient allowed under Clause 1.1(4).
- (3) For the purposes of (2)(b)(iv), the difference in level must be measured from the floor level at the entrance door, or if there is an attached deck, balcony or the like that provides a step-free connection to the entrance door, from the lowest point of that deck, balcony or the like above the surface beneath,
- (4) Even if Clause 1.1 is not complied with, all other relevant provisions of the ABCB Standard for Livable Housing Design must still be complied with.

Explanatory Information: Exemptions

The exemptions listed at H8D2(2)(b)(i) and (ii) provide for situations where the ramping necessary to provide a step-free access path would become too lengthy or too steep to be used regularly by a person with limited mobility, and therefore would offer little benefit to dwelling occupants or visitors. Such situations may occur due to a number of factors including (but not limited to) the following:

- The slope of the land upon which the ramp would be constructed. ~~For example, if the required step-free access path cannot be provided in one continuous direction, meaning it would instead need to be cut into the slope, or would run back and forth across the face of the slope, in order to stay within maximum gradient limits.~~
- The height of the lowest floor containing *habitable rooms* is too high to be reached by a ramp within *required* length and gradient limits. Floor heights can be influenced by factors such as dwelling style, *defined flood level*, location of the dwelling in an *alpine area*, or construction of the dwelling directly above a *private garage* (including garage-top dwellings).

The exemption listed at H8D2(2)(b)(iii) provides for situations where the amount of available space on the *site* is insufficient to accommodate a step-free access path. This may be due to the physical size of the *site*, or regulations outside of the NCC which limit the proportion of a *site* that can be covered by structures and/or impervious ground coverings.

It is important to note that under H8D2(2), an exemption may only be applied if, in a particular case, both (a) and (b) are applicable, not just one or the other.

Specification 42

House energy rating software

S42C1 Scope

This Specification sets out requirements for satisfying H6P1 and H6P2 using *house energy rating software*.

S42C2 Heating and cooling loads

- (1) A building must achieve an energy rating, including the separate heating and cooling load limits, using *house energy rating software*, of greater than or equal to—
 - (a) 7 stars; or
 - (b) for a building in *climate zones* 1 or 2, 6.5 stars if the building has an outdoor living area as described in (3) which is fully covered with an impervious roof having a *Total R-Value* greater than or equal to 1.5 (for downward heat flow); or
 - (c) for a building in *climate zones* 1 or 2, 6 stars if the building has an outdoor living area as described in (3) which—
 - (i) is fully covered with an impervious roof having a *Total R-Value* greater than or equal to 1.5 (for downward heat flow); and
 - (ii) has at least one permanently installed ceiling fan.
- (2) The heating and cooling load limits in (1) are specified in the ABCB Standard for NatHERS Heating and Cooling Load Limits.
- (3) An outdoor living area in (1)(b) and (1)(c) is a space that—
 - (a) is directly adjoining, and directly accessible from, a general purpose living area of a Class 1 building such as a lounge, kitchen, dining or family room, which is not a room for sleeping or specialist tasks such as a study or home theatre; and
 - (b) has a ~~floor area~~ *floor area* greater than or equal to 12.0 m²; and
 - (c) has length and width dimensions greater than or equal to 2.5 m each; and
 - (d) has an opening height above floor level greater than or equal to 2.1 m; and
 - (e) has one side permanently open with a second side either—
 - (i) permanently open; or
 - (ii) readily openable.
- (4) The sides referred to in (3)(e) must be greater than or equal to 900 mm from an allotment boundary or 900 mm from an obstruction to the breeze path such as a building, fence or other structure.
- (5) Where a ceiling fan is *required* as part of compliance with (1)(c), the fan must—
 - (a) be permanently installed; and
 - (b) have a speed controller; and
 - (c) serve the whole room, with the floor area that a single fan serves not exceeding—
 - (i) 15 m² if it has a blade rotation diameter of less than 1200 mm; and
 - (ii) 25 m² if it has a blade rotation diameter of greater than or equal to 1200 mm.

Explanatory Information: Complying with S42C2(1)

- To comply with (1), the modelled energy loads of a building must not exceed three separate load limits, i.e.—
 - (i) the total load limit corresponding to the applicable star rating; and
 - (ii) the heating load limit; and

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(iii) the cooling load limit.

- Information about building modelling using *house energy rating software* is available at www.nathers.gov.au.
- The ABCB Standard for NatHERS Heating and Cooling Load Limits can be accessed at www.abcb.gov.au.

Explanatory Information: Outdoor living areas

- The opening height in (3)(d) is to provide a breeze path and is likely to be the measurement from the floor to the underside of a perimeter beam. It is not a ceiling height measurement. It is also not a height for mounting a ceiling fan or the height of ceiling fan blades above the floor. These dimensions need to be determined considering the activities in the space, the safety of occupants of the space and any appropriate safety standards.
- There is some survey evidence that suggests the majority of home owners turn off their air-conditioners when using an outdoor living area. Another cost effective option is to install a reed switch or other micro switch on the door leading to the outdoor living area in order to automatically deactivate an air-conditioning unit when the door is left open for a period which allows occupants to enter and leave the air-conditioned space but does not affect the operation of the air-conditioner.
- A side referred to in (3)(e) may contain some obstructions such as columns and barriers. Where an open side is *required* to have a 1 m barrier, consideration as to the type (wire, solid or other) should be made with regard to the overall opening area of the two sides.

S42C3 Net equivalent energy usage

A building must achieve a whole-of-home rating of not less than 60 using *house energy rating software*.

S42C4 Additional Deemed-to-Satisfy Provisions when using house energy rating software

- (1) To comply with H6P1, in addition to S42C2, a building must comply with Section 13 of the ABCB Housing Provisions clauses—
 - (a) 13.2.2, for building *fabric* thermal insulation; and
 - (b) 13.2.3(7) and 13.2.5(5), for thermal breaks; and
 - (c) 13.2.3(5), for compensating for a loss of ceiling insulation, other than where the *house energy rating software* has compensated for a loss of ceiling insulation; and
 - (d) 13.2.6(4), 13.2.6(5)(a)(i), 13.2.6(5)(b)(i) and 13.2.6(6) for *floor* slab edge insulation; and
 - (e) Part 13.4, for building sealing.
- (2) To comply with H6P2, in addition to S42C3, a building must comply with Part 13.7 of the ABCB Housing Provisions.