



**National
Construction
Code**

Volume Three Plumbing Code of Australia



**Australian
Building
Codes Board**

2022

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Introduction to the National Construction Code (NCC)

About the NCC

The NCC is Australia's primary set of technical design and construction provisions for buildings. As a performance-based code, it sets the minimum required level for the safety, health, amenity, accessibility and sustainability of certain buildings. It primarily applies to the design and construction of new buildings, and plumbing and drainage systems in new and existing buildings. In some cases it may also apply to structures associated with buildings and new building work or new plumbing and drainage work in existing buildings.

The Australian Building Codes Board (ABCB), on behalf of the Australian Government and each State and Territory government, produces and maintains the NCC. When determining the content of the NCC, the ABCB seeks to—

- ensure requirements have a rigorously tested rationale; and
- effectively and proportionally address applicable issues; and
- create benefits to society that outweigh costs; and
- consider non-regulatory alternatives; and
- consider the competitive effects of regulation; and
- not be unnecessarily restrictive.

The primary users of the NCC include architects, builders, plumbers, building surveyors, hydraulic consultants, engineers and other building and plumbing related professions and trades.

Format of the NCC

The NCC is published in three volumes. The Building Code of Australia (BCA) is Volumes One and Two of the NCC and the Plumbing Code of Australia (PCA) is Volume Three of the NCC.

Components of the NCC

The NCC provides the technical provisions for the design and construction of buildings and other structures, and plumbing and drainage systems.

NCC Volume One primarily covers the design and construction of multi-residential, commercial, industrial and public assembly buildings and some associated structures.

NCC Volume Two primarily covers the design and construction of smaller scale buildings including houses, small sheds, carports and some associated structures.

NCC Volume Three covers the design, construction and maintenance of plumbing and drainage systems in new and existing buildings.

Each volume contains—

- Governing Requirements; and
- Performance Requirements; and
- compliance options to meet the NCC requirements; and
- State and Territory variations and additions.

The NCC uses building classifications to identify requirements for different intended purposes of buildings or parts of buildings. A building classification relates to the characteristics and the intended use of the building. Information on building classifications is found in [Part A6](#) of the Governing Requirements.

Legislative arrangements and the NCC

The NCC is given legal effect through State and Territory, or other statutory authority, building and plumbing legislation. These Acts and Regulations set out the legal framework and administration mechanisms for the NCC to support the design and construction of buildings.

The dates of adoption of the NCC are determined by State and Territory building and plumbing administrations.

How to use the NCC

Each volume of the NCC is split into two main sections:

- Administrative requirements contained within the Governing Requirements.
- Technical requirements contained within the remaining sections of the NCC.

The Governing Requirements provide the rules and instructions for using and complying with the NCC. They are vital in understanding how the technical requirements of the NCC should be applied to any particular situation. The Governing Requirements are also important in understanding how the NCC fits with the building and plumbing regulatory framework within Australia.

NCC clause numbering system

The NCC uses a uniform clause numbering system across each of its three volumes. This system is called Section-Part-Type-Clause (SPTC). In each clause number—

- The first letter indicates which NCC Section sits within, or if the letter S is used, that the clause is part of a Specification. The letter S is used in place of a Section indicator because the same Specification may be called up in several different Sections of the NCC.
- The first number indicates the number of each Part within a Section, or the number of a Specification. Parts are numbered sequentially within each Section, starting at 1. Specifications are numbered sequentially across all three volumes, also starting at 1.
- The second letter indicates the clause Type. It will be either G, O, F, P, V, D or C and these are explained below.
- The second number is the clause number within each Part or Specification.

The clause Types used in the NCC are as follows:

- G = Governing requirement (mandatory)
- O = Objective (guidance)
- F = Functional Statement (guidance)
- P = Performance Requirement (mandatory)
- V = Verification Method (optional)
- D = Deemed-to-Satisfy Provision (optional)
- C = Clause in a Specification (clauses in Specifications may be mandatory or optional, depending on how the Specification is called up by the NCC).

Informative parts of the NCC (e.g. Introduction to the NCC) are not numbered and do not have numbered paragraphs. This helps make it easy to see that their content is information only and does not contain any regulatory requirements.

Introduction to NCC Volume Three

About NCC Volume Three

NCC Volume Three contains technical requirements for the design and construction for plumbing and drainage systems in new and existing buildings. Volume Three applies to these systems in all classes of buildings whenever plumbing work is carried out. Volume Three additionally applies to sites where water services are constructed independent of buildings.

Components of NCC Volume Three

NCC Volume Three contains the following Sections:

- Section A – Governing Requirements, common across the NCC
- Section B – Water services
- Section C – Sanitary plumbing and drainage systems
- Section D – Excessive noise
- Section E – Facilities
- Schedules –
 - Abbreviations and symbols
 - NCC defined terms
 - Referenced documents
 - State and Territory variations and additions

Section A contains the mandatory Governing Requirements for the NCC. Sections B to E contain mandatory Performance Requirements and the compliance options to satisfy compliance with the NCC.

List of NCC Specifications

Table 1 sets out the number and title of each NCC Specification, along with the clauses in each NCC Volume that refer to the Specification.

Table 1: List of NCC Specifications

Spec no.	Title	References	
		Vols. One and Two	Vol. Three
1	Fire resistance of building elements	A5G5; A5G6; C4D15; S2C1; S9C2	A5G5; A5G6
2	Description of materials referred to in Specification 1	A5G5; A5G6; C4D15; S1C2; S9C2	A5G5; A5G6
3	Fire hazard properties (determination)	A5G6	A5G6
4	Design of buildings in cyclonic areas	B1D3	-
5	Fire-resisting construction	C2D2; C2D10; C3D6; C3D8; C3D9; C3D10; C3D11; C3D13; C4D6; C4D8; C4D13; C4D15; D2D13; E1D5; G3D6; S17C11; S18C4; S31C3	-
6	Structural tests for lightweight construction	B1D4; C2D9; S5C23; S14C2; S32C2; S32C3; Housing Provisions 9.3.1	-
7	Fire hazard properties (requirements)	C2D11; C2D14; S3C2; S14C2; S19C7; S32C6	-
8	Performance of external walls in fire	C2D12	-
9	Cavity barriers for fire-protected timber	C2D13; C4D16; S5C11; S5C20	-
10	Fire protected timber	S1C2	-
11	Smoke-proof walls in health-care and residential care buildings	C3D6; C3D15; C4D12; E2D11	-
12	Fire doors, smoke doors, fire windows and shutters	C4D5; G3D4; S11C2; S11C3	-
13	Penetration of walls, floors and ceilings by services	C4D15	-
14	Non-required stairways, ramps and escalators	C2D11; D2D17	-
15	Braille and tactile signs	D4D7; S27C10	-
16	Accessible water entry/exit for swimming pools	D4D11	-
17	Fire sprinkler systems	C1V3; C2D6; C2D13; C3D2; C3D4; C3D7; C3D8; C4D6; C4D7; C4D8; C4D9; C4D12; D2D4; D2D17; E1D4; E2D8; E2D9; E2D10; E2D11; E2D13; E2D14; E2D15; E2D16; E2D17; E2D19; E2D20; G3D1; G3D6; G6D6; I1D2; S5C10; S5C11; S5C14; S5C18; S5C19; S5C20; S5C21; S5C22; S5C24; S7C3; S7C4; S19C11; S20C3; S20C4; S20C5; S31C2	-
18	Class 2 and 3 buildings not more than 25 m in effective	E1D4; S17C2; S23C1;	-

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Spec no.	Title	References	
		Vols. One and Two	Vol. Three
19	Fire control centres	E1D14	-
20	Smoke detection and alarm systems	E2D3; E2D5; E2D7; E2D8; E2D9; E2D11; E2D13; E2D14; E2D15; E2D16; E2D17; E2D18; E2D19; E2D20; S5C19; S5C22; S17C8; S18C3; S21C7; S21C8; S22C3	-
21	Smoke exhaust systems	C3D13; E2D10; E2D14; E2D15; E2D16; E2D17; E2D18; E2D19; E2D20; S20C6; S20C8	-
22	Smoke-and-heat vents	E2D10; E2D14; E2D15; E2D16; E2D17; E2D18; E2D19; E2D20; S20C8	-
23	Residential fire safety systems	S18C3; S18C4	-
24	Lift installations	E3D2	-
25	Photoluminescent exit signs	E4D8	-
26	Waterproofing and water resistance requirements for building elements in wet areas	F1D6	-
27	Accessible adult change facilities	F4D12; S15C1	-
28	Sound insulation for building elements	F5D3; F5D4	-
29	Impact sound — Test of equivalence	F5D4; S28C2	-
30	Installation of boilers and pressure vessels	G2D2	-
31	Fire and smoke control in buildings containing atriums	G3D4; G3D8; S14C2	-
32	Construction of proscenium walls	C2D11; I1D3	-
33	Additional requirements	J1V1; J1V2; J1V3	-
34	Modelling parameters	J1V2; J1V3; S35C1	-
35	Modelling profiles	S34C3	-
36	Material properties	J3D3	-
37	Calculation of U-Value and solar admittance	J3D3; J3D6	-
38	Spandrel panel thermal performance	S37C3; S37C4	-
39	Sub-floor thermal performance	J3D3	-
40	Lighting and power control devices	J6D3; J6D4; J6D5; J6D6; J6D7	-
41	Cross-connection hazards	-	B5D2; B5D3; B5D4
42	Heating and cooling load limits	H6D2	-
43	Bushfire protection for certain Class 9 buildings	G5D4	-

History of adoption of NCC Volume Three

Table 1: History of adoption of NCC Volume Three

Edition	Commonwealth	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
NCC 2011	1 May 2011	1 May 2011	Not adopted	Not adopted	5 May 2011	11 Jul 2011	1 May 2011	1 May 2011	Not adopted
NCC 2012	1 May 2012	Not adopted	1 Jul 2012	3 Aug 2012	1 May 2012	1 May 2012	1 May 2012	1 May 2012	Not adopted
NCC 2013	1 May 2013	1 Sep 2013	1 May 2013	1 May 2013	1 May 2013	1 May 2013	1 May 2013	1 May 2013	Not adopted
NCC 2014	1 May 2014	1 May 2014	1 May 2014	1 May 2014	1 May 2014	1 May 2014	1 May 2014	1 May 2014	Not adopted ¹
NCC 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015	1 May 2015
NCC 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016	1 May 2016
NCC 2019	1 May 2019	1 Jun 2019	1 May 2019	1 May 2019	1 May 2019	1 May 2019	1 May 2019	1 May 2019	1 May 2019
NCC 2019 Amdt 1	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020	1 Jul 2020

Adoption of NCC 2011 Volume Three

The 2011 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2012 Volume Three

The 2012 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2013 Volume Three

The 2013 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2014 Volume Three

The 2014 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2015 Volume Three

The 2015 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2016 Volume Three

The 2016 edition of the NCC Volume Three was adopted as set out in Table 1.

Adoption of NCC 2019 Volume Three

The 2019 edition of the NCC Volume Three was adopted as set out in Table 1.

NCC 2019 Amendment No. 1

Amendment No. 1 to the 2019 edition of NCC Volume Three was adopted as set out in Table 1.

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Section A Governing requirements

Part A1 Interpreting the NCC

Governing Requirements

A1G1	Scope of NCC Volume One
A1G2	Scope of NCC Volume Two
A1G3	Scope of NCC Volume Three
A1G4	Interpretation

Part A2 Compliance with the NCC

Governing Requirements

A2G1	Compliance
A2G2	Performance Solution
A2G3	Deemed-to-Satisfy Solution
A2G4	A combination of solutions

Part A3 Application of the NCC in States and Territories

Governing Requirements

A3G1	State and Territory compliance
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Part A4 Referenced documents

Governing Requirements

A4G1	Referenced documents
A4G2	Differences between referenced documents and the NCC
A4G3	Adoption of referenced documents

Part A5 Documentation of design and construction

Governing Requirements

A5G1	Suitability
A5G2	Evidence of suitability – Volumes One, Two and Three
A5G3	Evidence of suitability – Volumes One and Two (BCA)
A5G4	Evidence of suitability – Volume Three (PCA)
A5G5	Fire-resistance of building elements
A5G6	Fire hazard properties
A5G7	Resistance to the incipient spread of fire
A5G8	Labelling of Aluminium Composite Panels

Part A6 Building classification

Governing Requirements

A6G1	Determining a building classification
A6G2	Class 1 buildings
A6G3	Class 2 buildings
A6G4	Class 3 buildings
A6G5	Class 4 buildings

A6G6	Class 5 buildings
A6G7	Class 6 buildings
A6G8	Class 7 buildings
A6G9	Class 8 buildings
A6G10	Class 9 buildings
A6G11	Class 10 buildings and structures
A6G12	Multiple classifications

Part A7

United buildings

Governing Requirements

A7G1	United buildings
A7G2	Alterations in a united building

Part A8

Quantification of the fire safety Performance Requirements

Governing Requirements

<u>A8G1</u>	<u>Application of Part</u>
<u>A8G2</u>	<u>Fire safety</u>
<u>A8G3</u>	<u>Spread of fire</u>

Specification 1

Fire-resistance of building elements

S1C1	Scope
S1C2	Rating
S1C3	FRLs determined by calculation
S1C4	Interchangeable materials
S1C5	Columns covered with lightweight construction
S1C6	Non-loadbearing elements

Specification 2

Descriptions of elements referred to in Specification 1

<u>S2C1</u>	<u>Scope</u>
S2C2	Mortar for masonry
S2C3	Gypsum blocks
S2C4	Gypsum-sand mortar and plaster
S2C5	Gypsum-perlite and gypsum-vermiculite plaster
S2C6	Plaster of cement and sand or cement, lime and sand
S2C7	Plaster reinforcement
S2C8	Ashlar stone masonry
S2C9	Dimensions of masonry
S2C10	Solid units
S2C11	Hollow units
S2C12	Equivalent thickness
S2C13	Height-to-thickness ratio of certain walls
S2C14	Walls
S2C15	Columns

S2C16	Walls
S2C17	Columns
S2C18	Beams
S2C19	Columns
S2C20	Beams
S2C21	Filling of column spaces
S2C22	Hollow terracotta blocks
S2C23	Masonry
S2C24	Gypsum blocks and hollow terracotta blocks
S2C25	Structural concrete and poured gypsum
S2C26	Gypsum-perlite or gypsum-vermiculite plaster sprayed to contour
S2C27	Measurement of thickness of column and beam protection

Specification 3 Fire hazard properties

S3C1	Scope
S3C2	General requirement
S3C3	Form of test
S3C4	Test specimens
S3C5	Concession
S3C6	Smaller specimen permitted

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Part A1 Interpreting the NCC

Introduction to this Part

This Part explains important concepts on how the NCC must be interpreted and applied. There are certain conventions and approaches that need to be taken into account when using the NCC. This includes interpreting specific language and terms. This is critical to understanding the intended technical and legal meaning of the NCC. This Part also explains the difference between the mandatory parts of the NCC and the parts that are only explanatory or guidance in nature.

Governing Requirements

A1G1 Scope of NCC Volume One

[New for 2022]

NCC Volume One contains the requirements for—

- (a) all Class 2 to 9 buildings; and
- (b) access requirements for people with a disability in Class 1b and 10a buildings; and
- (c) certain Class 10b structures including access requirements for people with a disability in Class 10b swimming pools.

A1G2 Scope of NCC Volume Two

[New for 2022]

NCC Volume Two contains the requirements for—

- (a) Class 1 and 10a buildings (other than access requirements for people with a disability in Class 1b and 10a buildings); and
- (b) certain Class 10b structures (other than access requirements for people with a disability in Class 10b swimming pools); and
- (c) Class 10c private bushfire shelters.

A1G3 Scope of NCC Volume Three

[New for 2022]

- (1) NCC Volume Three contains technical requirements for the design, construction, installation, replacement, repair, alteration and maintenance for plumbing and drainage systems in new and existing buildings.
- (2) NCC Volume Three applies to these systems in all classes of buildings whenever plumbing and drainage work is carried out.
- (3) NCC Volume Three additionally applies to sites where services are constructed independently of buildings.

A1G14 Interpretation

[2019: A1.0]

- (1) The following components of the NCC are non-mandatory and informative:
 - (a) Content identified as “explanatory information”.
 - (b) The “Introduction ~~to this Part~~” information, located at the beginning of each Volume, Section or Part.
- (2) Words in italics must be interpreted in accordance with—

- (a) definitions provided in Schedule 2¹, unless the contrary intention appears; and
 - (b) additional definitions in State or Territory appendices, as appropriate.
- (3) The NCC must be interpreted and applied in accordance with the following:
- (a) A reference to a building is a reference to an entire building or part of a building (as the case requires).
 - (b) A reference to *plumbing or drainage solution*, or *product* in Volume Three is a reference to an entire installation, system or *product*, or part of an installation, system or *product* (as the case requires).
 - (c) A reference in a *Performance Requirement* to “the degree necessary” means—
 - (i) that consideration of all the criteria referred to in the *Performance Requirement* will determine the outcome appropriate to the circumstances; and
 - (ii) that in certain cases it may not be necessary to incorporate any specific measures to meet the relevant *Performance Requirement*.
 - (d) An “Application” statement is mandatory and is provided to specify where and when a requirement or provision applies.
 - (e) A “Limitation” statement is mandatory and is provided to specify where and when the application of a requirement or provision is limited to a certain circumstance.
 - (f) An “Exemption” statement is mandatory and is provided to specify where or when a requirement or provision does not need to be complied with.
 - (g) A “Note” is part of a provision or requirement and provides additional mandatory instructions.
 - (h) Figures in the NCC—
 - (i) are used to illustrate specific issues referenced in the associated text; and
 - (ii) are not to be construed as containing all design information that is *required* for that particular building element or situation.
 - (i) The defined symbols and abbreviations listed in Schedule 1.
- (4) A reference to a building class is a reference to all the sub-classifications of that class.
- (5) The following sub-classifications apply:
- (a) Classes 1a and 1b are sub-classifications of Class 1.
 - (b) Classes 7a and 7b are sub-classifications of Class 7.
 - (c) Classes 9a, 9b and 9c are sub-classifications of Class 9.
 - (d) Classes 10a, 10b and 10c are sub-classifications of Class 10.
- (6) A reference to a sub-classification is solely to that sub-classification.

TAS A1G14(7)

Notes:

For Volume Three, if a word is not defined in Schedule 2, the meaning (if any) attributed to it under AS/NZS 3500.0 should be used unless the contrary intention appears.

Explanatory Information:

Explanatory information and Introduction ~~to this Section~~ information contained in the NCC ~~or Introduction to this Part information contained in Volumes One and Two of the NCC are~~ is non-mandatory and ~~are~~ is provided for guidance purposes only. This informative material should be read in conjunction with the technical provisions of the NCC. Any statements made in the informative and guidance components of the NCC should not be taken to override the NCC. Unlike the NCC, which is adopted by legislation, the informative and guidance components are not called up into legislation and they do not cover State and Territory variations and additions. Because informative and guidance components of the NCC do not have regulatory force, the ABCB accepts no responsibility for its contents when applied to specific buildings or any liability which may result from its use.

Defined words provide the precise meaning and expressions of key words used for understanding and complying with the NCC. Where a word is not defined in the NCC, the relevant common meaning of the word should be used.

Generally, a reference to a building is a reference to the whole building, regardless of classification. However, when a

provision is applicable to a specific class or classes of building, that reference to a building may be a reference to the whole building or part of the building depending on how the building is classified.

Whether a provision applies or not depends on the circumstances of the case and the circumstances in which the reference is made. For example, where a building has a single classification, a reference to a building in the NCC is understandably a reference to a whole building. However, where a building has parts of different classification, unless the contrary intention appears (i.e. there is a specific reference to the whole building), a reference to a building in the NCC is a reference to the relevant part of the building. This means that each part of the building must comply with the relevant provisions for its classification.

A number of the *Performance Requirements* of the NCC use the expression “to the degree necessary” or “appropriate to”. These expressions provide flexibility by allowing appropriate authorities to determine the degree of compliance necessary in a particular case. Therefore, any part of the NCC that uses these expressions should be referenced against the requirements of the appropriate authority. For example, an *appropriate authority* might judge that an item need not be installed, or a particular level of performance be achieved.

Application, Limitation, and Exemption statements are used to identify provisions that may or may not apply in certain situations, to varying degrees.

Classes 1a and 1b, 7a and 7b, 9a, 9b and 9c, and 10a, 10b and 10c are separate classifications. In the NCC, when the designation ‘a’, ‘b’ or ‘c’ is not applied, the reference is to all buildings of the general class. For example, ‘Class 9b’ refers only to Class 9b buildings, but ‘Class 9’ refers to Classes 9a, 9b and 9c.

Figures are used to explain the requirements of a particular clause. To ensure the context of the requirement is clearly understood, adjacent construction elements of the building that would normally be required in that particular situation are not always shown. Accordingly, aspects of figures that are not shown should not be interpreted as meaning these construction details are not *required*. Therefore a figure must not be used as an indication of the full construction requirements in a given situation, as the only available option, or a substitute for referencing appropriate construction requirements (in other sources) for a given clause.

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Part A2 Compliance with the NCC

Introduction to this Part

This Part explains the possible methods of demonstrating compliance with the NCC. It explains the various compliance pathways within the NCC and the appropriate steps that must be taken for each of these pathways.

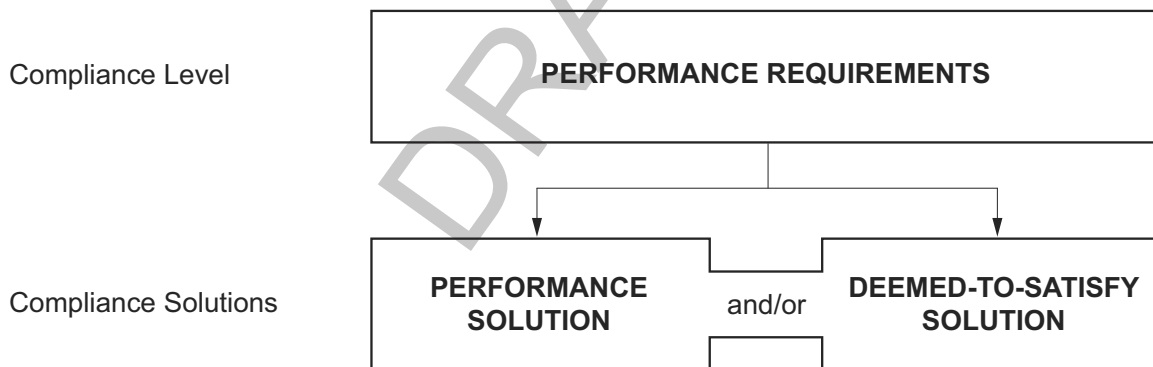
Governing Requirements

A2G1 Compliance

[2019: A2.0, A2.1]

- (1) Compliance with the NCC is achieved by complying with—
 - (a) the Governing Requirements of the NCC; and
 - (b) the *Performance Requirements*.
- (2) *Performance Requirements* are satisfied by one of the following, as shown in Figure A2G1:
 - (a) *Performance Solution*.
 - (b) *Deemed-to-Satisfy Solution*.
 - (c) A combination of (a) and (b).

Figure A2G1: NCC compliance structure



A2G2 Performance Solution

[2019: A2.2]

- (1) A *Performance Solution* is achieved by demonstrating—
 - (a) compliance with all relevant *Performance Requirements*; or
 - (b) the solution is at least *equivalent* to the *Deemed-to-Satisfy Provisions*.
- (2) A *Performance Solution* must be shown to comply with the relevant *Performance Requirements* through one or a combination of the following *Assessment Methods*:
 - (a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, *plumbing and drainage product*, form of construction or design meets the relevant *Performance Requirements*.
 - (b) A *Verification Method* including the following:
 - (i) The *Verification Methods* provided in the NCC.
 - (ii) Other *Verification Methods*, accepted by the *appropriate authority* that show compliance with the relevant *Performance Requirements*.

- (c) *Expert Judgement*.
 - (d) Comparison with the *Deemed-to-Satisfy Provisions*.
- (3) Where a *Performance Requirement* is satisfied entirely by a *Performance Solution*, in order to comply with (1) the following method must be used to determine the *Performance Requirement* or *Performance Requirements* relevant to the *Performance Solution*:
- (a) Identify the relevant *Performance Requirements* from the Section or Part to which the *Performance Solution* applies.
 - (b) Identify *Performance Requirements* from other Sections or Parts that are relevant to any aspects of the *Performance Solution* proposed or that are affected by the application of the *Performance Solution*.
- (4) Where a *Performance Requirement* is proposed to be satisfied by a *Performance Solution*, the following steps must be undertaken:
- (a) Prepare a *performance-based design brief* in consultation with relevant stakeholders.
 - (b) Carry out analysis, ~~using one or more of the Assessment Methods listed in (2)~~, as proposed by the *performance-based design brief*.
 - (c) Evaluate results from (4)(b) against the acceptance criteria in the *performance-based design brief*.
 - (d) Prepare a final report that includes—
 - (i) all *Performance Requirements* and/or *Deemed-to-Satisfy Provisions* identified through A2G2(3) or A2G4(3) as applicable; and
 - (ii) identification of all *Assessment Methods* used; and
 - (iii) details of steps (4)(a) to (4)(c); and
 - (iv) confirmation that the *Performance Requirement* has been met; and
 - (v) details of conditions or limitations, if any exist, regarding the *Performance Solution*.

A2G3 Deemed-to-Satisfy Solution

[2019: A2.3]

- (1) A solution that complies with the *Deemed-to-Satisfy Provisions* is deemed to have met the *Performance Requirements*.
- (2) A *Deemed-to-Satisfy Solution* can show compliance with the *Deemed-to-Satisfy Provisions* through one or more of the following *Assessment Methods*:
 - (a) Evidence of suitability in accordance with Part A5 that shows the use of a material, product, *plumbing and drainage product*, form of construction or design meets a *Deemed-to-Satisfy Provision*.
 - (b) *Expert Judgement*.

A2G4 A combination of solutions

[2019: A2.4]

- (1) *Performance Requirements* may be satisfied by using a combination of *Performance Solutions* and *Deemed-to-Satisfy Solutions*.
- (2) When using a combination of solutions, compliance can be shown through the following, as appropriate:
 - (a) A2G2 for assessment against the relevant *Performance Requirements*.
 - (b) A2G3 for assessment against the relevant *Deemed-to-Satisfy Provisions*.
- (3) Where a *Performance Requirement* is satisfied by a *Performance Solution* in combination with a *Deemed-to-Satisfy Solution*, in order to comply with (1), the following method must be used to determine the *Performance Requirement* or *Performance Requirements* relevant to the *Performance Solution*:
 - (a) Identify the relevant *Deemed-to-Satisfy Provisions* of each Section or Part that are to be the subject of the *Performance Solution*.
 - (b) Identify the *Performance Requirements* from the same Sections or Parts that are relevant to the identified

Deemed-to-Satisfy Provisions.

- (c) Identify *Performance Requirements* from other Sections or Parts that are relevant to any aspects of any *Performance Solution* proposed or that are affected by the application of the *Deemed-to-Satisfy Provisions* that are the subject of the *Performance Solution*.

Explanatory Information:

To comply with the NCC, a solution must achieve compliance with the Governing Requirements and the *Performance Requirements*. The Governing Requirements contain requirements about how the *Performance Requirements* must be met.

Performance Requirements outline the minimum necessary standards different buildings or building elements must attain. The *Performance Requirements* are the only NCC technical provisions that must be satisfied.

In some instances, State and Territory variations and additions may also be applicable to certain *Performance Requirements*.

A solution may be partly a *Performance Solution* and partly a *Deemed-to-Satisfy Solution*. However, no matter what method is chosen, building proponents need to always meet the *Performance Requirements* of the NCC.

A2G2(2)(b)(ii) provides for the use of *Verification Methods* that are not listed in the NCC. A *Verification Method* may include—

- a calculation, using analytical methods or mathematical models; or
- a test, using a technical procedure, either on-site or in a laboratory, to directly measure the extent to which the *Performance Requirements* have been met; or
- an inspection (and inspection report); or
- any other acceptable form of certification.

Any *Verification Method* used must be acceptable to the *appropriate authority*.

A *Performance Solution* must comply with all applicable *Performance Requirements* of the NCC. A *Performance Solution* provides a tailored solution to meet the intended objective of the *Performance Requirements*. A *Performance Solution* must comply with all relevant *Performance Requirements* and must be verified using one or a combination of the following *Assessment Methods*:

- Evidence of suitability.
- *Verification Method*.
- *Expert Judgement*.
- Comparison with the *Deemed-to-Satisfy Provisions*.

For example, building proponents who wish to know what has to be done to satisfy the fire safety *Performance Requirements* for a particular building can either follow the *Deemed-to-Satisfy Provisions* or develop a *Performance Solution*. Guidance on how to develop *Performance Solutions* can be found on the ABCB website at: www.abcb.gov.au. The ABCB Resource Library contains information on the development of *Performance Solutions* for both building and plumbing.

A *Deemed-to-Satisfy Solution* is achieved by following all appropriate *Deemed-to-Satisfy Provisions* in the NCC. The *Deemed-to-Satisfy Provisions* are prescriptive (i.e. like a recipe book, they tell you how, what and in which location things must be done). They include materials, components, design factors, and construction methods that, if used, are deemed to meet the *Performance Requirements*, hence the term “Deemed-to-Satisfy”.

A *Deemed-to-Satisfy Solution* may be verified using one or a combination of the following *Assessment Methods*:

- Evidence of suitability.
- *Expert Judgement*.

Some *Performance Requirements* are without *Deemed-to-Satisfy Solutions*. Compliance with these *Performance Requirements* must be achieved by using a *Performance Solution*.

When designing a building or plumbing or drainage system, both *Performance Solutions* and *Deemed-to-Satisfy Solutions* can be used to achieve compliance with *Performance Requirements*. A combination of solutions may be used to satisfy a single *Performance Requirement*. This may include occasions where a specific *Performance Requirement* covers a number of elements of a building or *plumbing* or *drainage* system.

No NCC provision can be considered in isolation. Any departure from the *Deemed-to-Satisfy Provisions* for a

Performance Solution needs to be assessed against the relevant *Performance Requirements* within the relevant NCC Section or Part. Additionally, the proposed *Performance Solution* may also impact on other *Performance Requirements* in other Sections or Parts. Thus, these additional *Performance Requirements* need to be considered in relation to the subject *Performance Solution*. A2G2(3) and A2G4(3) set out the methods for determining which *Performance Requirements* are relevant.

It is important that a holistic approach is used when determining the appropriate *Performance Requirements*.

More information on NCC compliance methods is located at www.abcb.gov.au.

A2G4(2)(a) references A2G2. Therefore, when using a combination of *Performance Solutions* and *Deemed-to-Satisfy Solutions* it is necessary to comply with A2G2(4) where a *Performance Requirement* is proposed to be satisfied by a *Performance Solution*.

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Part A3 Application of the NCC in States and Territories

Introduction to this Part

This Part explains applying the NCC in accordance with State or Territory legislation. The NCC has legal effect through references in relevant State or Territory building and plumbing legislation.

Although the NCC is a nationally consistent code, there are some situations where a State or Territory enforces a variation, addition or deletion to it. This Part also explains how these variations, additions and deletions apply.

Governing Requirements

A3G1 State and Territory compliance

[2019: A3.0]

- (1) For application within a particular State or Territory, the Volumes of the NCC comprise inclusively of—
 - (a) Sections A to J and associated schedules of Volume One; and
 - (b) Sections A and H and associated schedules of Volume Two; and
 - (c) Sections A to E and associated schedules of Volume Three.
- (2) State and Territory variations, additions and deletions must be complied with in conjunction with the NCC.
- (3) The NCC is subject to, and may be overridden by, State or Territory legislation.
- (4) State and Territory variations, additions and deletions are contained in the following Schedules:
 - (a) Schedule 3: Commonwealth of Australia.
 - (b) Schedule 4: Australian Capital Territory.
 - (c) Schedule 5: New South Wales.
 - (d) Schedule 6: Northern Territory.
 - (e) Schedule 7: Queensland.
 - (f) Schedule 8: South Australia.
 - (g) Schedule 9: Tasmania.
 - (h) Schedule 10: Victoria.
 - (i) Schedule 11: Western Australia.
- (5) State and Territory variations and deletions are identified throughout the NCC.

Explanatory Information:

The NCC is given legal effect by building regulatory legislation in each State and Territory. This legislation consists of an Act of Parliament and subordinate legislation which empowers the regulation of certain aspects of building and plumbing, and contains the administrative provisions necessary to give effect to the legislation.

Although the NCC is a national code, in some instances it is necessary for a State or Territory to vary or apply additional requirements specific to their jurisdiction. A3G1(2) highlights that these variations, additions or deletions must be applied in conjunction with the NCC provisions. Typically, these variations, additions or deletions override the requirements contained within the NCC.

Any provision of the NCC may be overridden by, or subject to, State or Territory legislation. The NCC must therefore be read in conjunction with that legislation. Any queries on such matters should be referred to the State or Territory authority responsible for building and plumbing regulatory matters.

Where a requirement or provision of the NCC is subject to a State or Territory variation, addition, or deletion, a reference to the appropriate provision in the applicable State or Territory schedule is included with that requirement or provision.

Part A4 Referenced documents

Introduction to this Part

This Part explains how documents referenced in the NCC are adopted and applied. The NCC itself does not contain details of every design and construction requirement for a building or *plumbing* or *drainage* system. As such, the NCC calls upon or “references” other documents with this information. These are called NCC referenced documents. Examples of such documents are Australian Standards, ABCB protocols, ABCB standards and other publications.

There are multiple types of referenced documents. A primary referenced document is one referenced in Schedule 32 of the NCC. A secondary referenced document is one referenced in a primary referenced document. Other referenced documents are referenced by secondary and subsequently referenced documents.

Governing Requirements

A4G1 Referenced documents

[2019: A4.0]

- (1) A reference in the NCC to a document refers to the edition or issues and any amendment listed in Schedule 32.
- (2) A document referenced in the NCC is only applicable in the context in which the document is quoted.

TAS A4G1(3)

- (3) Where a new edition, issue or amendment of a primary referenced document is not listed in Schedule 32, the new edition, issue or amendment is not referenced for the purpose of the NCC.
- (4) Any document referenced in a primary referenced document is known as a secondary referenced document.
- (5) A reference in a primary referenced document to a secondary or other referenced document is a reference to the document as it existed at the time of publication of the primary referenced document.

Applications:

A4G1 applies to documents referenced in the ABCB Housing Provisions in the same way as for documents referenced within any other part of the NCC.

Exemptions:

If the secondary or other referenced document is also a primary referenced document, A4G1(5) does not apply.

A4G2 Differences between referenced documents and the NCC

[2019: A4.1]

The NCC overrules any difference between the NCC (including the ABCB Housing Provisions) and a primary referenced document, including any secondary referenced document.

Applications:

A4G2 applies to documents referenced in the ABCB Housing Provisions in the same way as for other documents referenced by Volumes One, Two or Three of the NCC.

A4G3 Adoption of referenced documents

[2019: A4.2]

The NCC does not require compliance with requirements in relation to the following matters where they are prescribed in a referenced document:

- (a) The rights, responsibilities or obligations between the manufacturer, supplier or purchaser.
- (b) The responsibilities of any tradesperson or other building operative, architect, engineer, authority, or other person or body.
- (c) The submission for approval of any material, building component, form or method of construction, to any person, authority or body other than those empowered under State or Territory legislation to give that approval.
- (d) The submission of a material, product, form of construction or design to any person, authority or body for opinion.
- (e) Any departure from the NCC, rule, specification or provision at the sole discretion of the manufacturer or purchaser, or by arrangement or agreement between the manufacturer and purchaser.

Applications:

A4G3 applies to documents referenced in the ABCB Housing Provisions in the same way as for documents referenced within Volumes One, Two or Three of the NCC.

Explanatory Information:

Schedule 32 is only mandatory to *Deemed-to-Satisfy Provisions*, Specifications, *Verification Method* and Schedule 32. However, referenced documents are only applicable to the NCC provision that references the document.

A proponent undertaking a *Performance Solution* can use any element or edition of any document, if they help satisfy the *Performance Requirements*. They do not need to use the documents listed in Schedule 32.

Schedule 32 lists the specific edition of the Standard or other document adopted, including any amendments considered appropriate for Schedule 32, the *Deemed-to-Satisfy Provisions*, Specifications or *Verification Methods*. Other editions of (or amendments to) the referenced document are not adopted and have no standing under the NCC.

A primary referenced document may refer to a secondary referenced document. A4G1(5) stipulates that the secondary referenced document is the edition of the document that existed at the time of publication of the primary referenced document. When another edition of (or amendment to) a secondary referenced document is released, subject to the exemption to A4G1, that edition (or amendment) is not adopted for the purposes of the primary referenced document.

A4G2 means that contractual matters or clauses defining responsibilities of various parties, and matters not appropriate for adoption in the NCC are not included when a document is called up in the NCC.

Part A5 Documentation of design and construction

Introduction to this Part

This Part explains the evidence needed to show that the NCC requirements are met and the solution is “fit for purpose”. It covers the use of materials, products, forms of construction and designs. It details separate requirements for the BCA and PCA.

Examples of evidence to be prepared and retained include certificates, reports, calculations and any other documents or information showing compliance with the NCC requirements.

Governing Requirements

A5G1 Suitability

[2019: A5.0]

- (1) A building and *plumbing* or *drainage* installation must be constructed using materials, products, *plumbing products*, forms of construction and designs fit for their intended purpose to achieve the relevant requirements of the NCC.
- (2) For the purposes of (1), a material, product, *plumbing product*, form of construction or design is fit for purpose if it is—
 - (a) supported by evidence of suitability in accordance with—
 - (i) A5G2; and
 - (ii) A5G3 or A5G4 as appropriate; and
 - (b) constructed or installed in an appropriate manner.

Explanatory Information:

A5G1 relates to the quality of work and materials needed to construct a building to meet NCC requirements.

This means that—

- all people involved with construction must work skilfully in accordance with good trade practice; and
- all materials must be of a quality to fulfil their function/s within the building.

A5G1 only applies to matters normally covered by the NCC.

While A5G1 outlines quality of work and material demands, sometimes additional conditions may be required by—

- other Commonwealth, State or Territory legislation; and
- contracts that include either specific quality requirements, or requirements for specific materials and the like.

Explanatory Information: Example

Permit authorities would ordinarily not apply A5G1 to such matters as—

- plastering — other than for fire rating, waterproofing of *wet areas*, and sound insulation; or
- painting — other than that required for weatherproofing an *external wall*.

When determining which form of evidence will be used, it is important to consider the appropriateness of the evidence, as some forms of evidence may be more suitable to materials and products and others to designs and forms of construction. The requirement to consider appropriateness of the evidence is specified in A5G2(1).

A5G2 Evidence of suitability – Volumes One, Two and Three

[2019: A5.1]

- (1) The form of evidence used must be appropriate to the use of the material, product, *plumbing product*, form of construction or design to which it relates.
- (2) Any copy of documentary evidence submitted must be a complete copy of the original certificate, report or document.

Explanatory Information:

For further guidance, refer to the ABCB Handbook for Evidence of Suitability.

All copies of documents provided as evidence must be unabridged copies of the originals. No part can be left incomplete.

A5G3 Evidence of suitability – Volumes One and Two (BCA)

[2019: A5.2]

- (1) Subject to A5G5, A5G6 and A5G7, evidence to support that the use of a material, product, form of construction or design meets a *Performance Requirement* or a *Deemed-to-Satisfy Provision* may be in the form of any one, or any combination of the following:
 - (a) A current CodeMark Australia or CodeMark *Certificate of Conformity*.
 - (b) A current *Certificate of Accreditation*.
 - (c) A current certificate, other than a certificate described in (a) and (b), issued by a *certification body* stating that the properties and performance of a material, product, form of construction or design fulfil specific requirements of the BCA.
 - (d) A report issued by an *Accredited Testing Laboratory* that—
 - (i) demonstrates that a material, product or form of construction fulfils specific requirements of the BCA; and
 - (ii) sets out the tests the material, product or form of construction has been subjected to and the results of those tests and any other relevant information that has been relied upon to demonstrate it fulfils specific requirements of the BCA.
 - (e) A certificate or report from a *professional engineer* or other *appropriately qualified person* that—
 - (i) certifies that a material, product, form of construction or design fulfils specific requirements of the BCA; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.
 - (f) Another form of documentary evidence, such as but not limited to a *Product Technical Statement*, that—
 - (i) demonstrates that a material, product, form of construction or design fulfils specific requirements of the BCA; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon to demonstrate it fulfils specific requirements of the BCA.
- (2) Evidence to support that a calculation method complies with an ABCB protocol may be in the form of any one, or any combination of the following:
 - (a) A certificate from a *professional engineer* or other *appropriately qualified person* that—
 - (i) certifies that the calculation method complies with a relevant ABCB protocol; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice and other publications have been relied upon.
 - (b) Another form of documentary evidence that correctly describes how the calculation method complies with a relevant ABCB protocol.

Applications:

A5G3 is only applicable to NCC Volumes One and Two (BCA).

Explanatory Information:

A5G3 represents the minimum level of documentary evidence needed to show that a material, product, form of construction or design meets the relevant NCC requirements. The evidence can be required by:

- an *appropriate authority*;
- a party to a construction contract; or
- a person certifying compliance with the NCC.

If a building proponent does not produce exactly what is required, the evidence may be rejected.

It should be noted that design may refer to engineering design, architectural design as well as product and material design.

A5G3(1)(f) allows for the use of alternative forms of documentary evidence to those included in A5G3(1)(a) to (e), as long as they comply with certain specified conditions.

An example of this arises when an authority carries out an inspection of a building site. The inspection alone would not be acceptable as evidence. However, if the authority compiled a written report detailing findings and conclusions from the inspection, then it may comply with the requirements of A5G3(1)(f).

A *Product Technical Statement* detailing the characteristics and merits of a particular product or system is also an example of another form of documentary evidence.

There is significant reliance by industry on the use of calculation methods, including software programs, for demonstrating compliance with the NCC. While there is no formal recognition of specific methods, A5G3(2) allows suitable evidence to be submitted to demonstrate that a calculation method (including a software program) complies with a relevant ABCB protocol that establishes the characteristics of a suitable calculation method.

[Current documentary evidence, such as a certificate or report, containing provision references relating to NCC 2019 remains valid despite amended provision references in NCC 2022. Documentary evidence prepared after the NCC 2022 adoption date is to reflect NCC 2022 provision references.](#)

If under a *Deemed-to-Satisfy Provision* a building element is *required* to have an FRL, then A5G3 may be used to provide evidence to show that the FRL has been determined in accordance with [Specification 1](#) and [2](#).

In the case of a test report from an *Accredited Testing Laboratory*, the report may be either—

- the test report referred to in clause 2.16.2 of AS 1530.4 (also referred to as a full test report); or
- the regulatory information report referred to in clause 2.16.3 of AS 1530.4 (also referred to as a short-form report).

In both cases the report must be an unabridged copy of the original report. A test certificate referred to in clause 2.16.4 of AS 1530.4 on its own is not suitable for showing compliance with the NCC.

If a proposal uses a *Deemed-to-Satisfy Provision* that requires a building element to have *fire hazard properties*, then A5G3 may be used to provide evidence to support the proposal and show that the *fire hazard properties* have been determined in accordance with A5G6.

Refer to the guidance provided in the Guide to Volume One for further information on *fire hazard properties* which includes—

- *Flammability Index*; and
- *Spread-of-Flame Index*; and
- *Smoke-Developed Index*; and
- a material's *group number*; and
- *smoke growth rate index*.

The *Deemed-to-Satisfy Provisions* of the BCA contain a number of provisions requiring a ceiling to have a *resistance to the incipient spread of fire* to the space above itself. A5G7 sets out the method of determining the incipient spread of fire. The method is based on the method of determining the FRL of a building element and use of the *Standard Fire Test*.

A5G4 Evidence of suitability – Volume Three (PCA)

[2019: A5.3]

TAS A5G4(1)

- (1) Any *product* that is intended for use in contact with *drinking water* must comply with the relevant requirements of AS/NZS 4020, verified in the form of either—
- (a) A test report provided by ~~an certification body or~~ Accredited Testing Laboratory, in accordance with AS/NZS 4020; or
 - (b) A WaterMark licence issued in accordance with (32), if it includes compliance with AS/NZS 4020.
- (2) Any copper alloy product that is intended for use in contact with drinking water must have a weighted average lead content of no more than 0.25% verified in the form of either—
- (a) a test report provided by an Accredited Testing Laboratory, in accordance with NSF/ANSI 372; or
 - (b) a WaterMark licence issued in accordance with (3), if it includes compliance with NSF/ANSI 372.
- (23) A *product* of a type listed on the *WaterMark Schedule of Products* is deemed to be fit for its intended purpose if it has a *WaterMark Licence* issued in accordance with the WaterMark Scheme Rules.

TAS A5G4(34)

- (34) A *product* of a type listed on the *Watermark Schedule of Excluded Products* requires evidence of suitability in the form of—
- (a) a current certificate issued by a *certification body* stating that the properties and performance of a *product* can meet the requirements of the PCA; or
 - (b) a report issued by an *Accredited Testing Laboratory* that—
 - (i) demonstrates that the *product* complies with the relevant requirements of the PCA; and
 - (ii) sets out the tests the *product* has been submitted to and the results of those tests and any other relevant information that has been relied upon to demonstrate suitability for use in a *plumbing* or *drainage* installation.
- (45) Any *product* that is not covered by (32) or (43) must be subjected to a risk assessment in accordance with the WaterMark Scheme Rules.

TAS A5G4(56)

- (56) Evidence to support that a design or system meets the relevant PCA *Performance Requirements* must be in the form of any one or any combination of the following:
- (a) The design or system complies with a *Deemed-to-Satisfy Provision*.
 - (b) The design or system is a *Performance Solution* from a *professional engineer* or a *recognised expert* that—
 - (i) certifies that the design or system complies with the relevant requirements of the PCA; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon.
 - (c) Any other form of documentary evidence that—
 - (i) demonstrates that a design or system complies with the relevant requirements of the PCA; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon.

TAS A5G4(1011)

TAS A5G4(67)

TAS A5G4(78)

TAS A5G4(89)

TAS A5G4(910)

Applications:

A5G4 is only applicable to NCC Volume Three (PCA).

Explanatory Information:

A5G4(1) requires any *product* intended for use in contact with *drinking water* to comply with AS/NZS 4020. Compliance is achieved by passing the relevant tests set out in the Standard.

Evidence of compliance must then be provided in accordance with A5G4(1), under which there are two options. The first, at A5G4(1)(a), recognises test reports and certificates that cover compliance with AS/NZS 4020 only. The second, at A5G4(1)(b), recognises *WaterMark Licences* where compliance with AS/NZS 4020 is a requirement of the relevant *product* Standard or WaterMark Technical Specification.

For *products* that are of a type listed on the *WaterMark Schedule of Products*, A5G4(2) requires that these *products* have a *WaterMark Licence*. A *WaterMark Licence* reflects that the *product* has been certified and authorised in accordance with the WaterMark Scheme Rules.

For *products* that are not subject to WaterMark certification (i.e. excluded *products*), evidence that can be used to support that the *product* is fit for its intended purpose is provided in A5G4(3). This may include demonstrating compliance with a *product* specification referenced in the *WaterMark Schedule of Excluded Products*, where one is available.

A5G4(4) provides that any product that is not listed on the *WaterMark Schedule of Products* or the *WaterMark Schedule of Excluded Products* must be subjected to a risk assessment in accordance with the WaterMark Scheme Rules. The risk assessment will determine whether the product in question requires certification and authorisation, or if it should be listed as an “excluded product”. This in turn will determine the form of evidence of suitability applicable to the *product*.

Applications:

Products captured by A5G4(2) include:

- (a) Copper alloy fittings.
- (b) Stainless-steel braided hoses.
- (c) Valves (such as valves for isolation, backflow prevention, alteration of pressure and temperature).
- (d) Taps and mixers.
- (e) Water meters.
- (f) Pumps (for use with cold and heated water services).
- (g) Water heaters.
- (h) Residential water filtration equipment.
- (i) Water dispensers (such as boiling and cooling units, drinking fountains and bottle fillers).

Exemptions:

- (1) Products that are used exclusively for non-drinking uses such as manufacturing, industrial processing, irrigation or any other uses where water is not anticipated to be used for human consumption are excluded from the requirements of A5G4(2).
- (2) Products excluded by A5G4(2) include:
 - (i) Shower heads for bathing and emergency showers, eye wash and/or face wash equipment.
 - (ii) Pumps used for irrigation, fire-fighting or other non-drinking water purposes.
 - (iii) Fire-fighting water services and equipment including residential fire sprinklers.
 - (iv) Appliances, including washing machines and dishwashers.
 - (v) Commercial boilers associated with heating, ventilation and air-conditioning systems.
 - (vi) Sanitary fixtures (such as toilets, cistern inlet valves, bidets, urinals).
 - (vii) Non-drinking water systems (such as recycled water systems).

Explanatory Information: What is WaterMark?

The *WaterMark Certification Scheme* is a mandatory certification scheme for *plumbing* and *drainage products* to ensure that these *products* are fit for purpose and appropriately authorised for use in a *plumbing* or *drainage* system.

The PCA, through Part A5, requires certain *plumbing* and *drainage products* to be certified and authorised for use in a *plumbing* or *drainage* system. These products are certified through the *WaterMark Certification Scheme* and listed on

the WaterMark Product Database.

The *WaterMark Certification Scheme* is governed by the WaterMark Scheme Rules, which are available for download from the ABCB website at: www.abcb.gov.au. These rules set out the requirements for risk assessments, evaluation, certification, and the drafting of WaterMark Technical Specifications.

When a *product* is listed on the *WaterMark Schedule of Products* then, for it to be certified and authorised, the *product* must—

- be tested by an *Accredited Testing Laboratory*; and
- comply with an approved *product* specification (either a relevant existing *product* Standard or a WaterMark Technical Specification); and
- be manufactured in accordance with an approved Quality Assurance Program; and
- carry a scope of use.

Products that comply fully with the applicable requirements of the *WaterMark Certification Scheme* are then eligible to be certified by a *WaterMark Conformity Assessment Body* and listed on the WaterMark Product Database. Certified *products* are identifiable by the WaterMark certification trade mark, shown in Figure A5G4 below, that must be displayed on the *product* upon granting of a *WaterMark Licence*.

Figure A5G4 (explanatory): WaterMark Certification Scheme Trademarks



A5G5 Fire-resistance of building elements

[2019: A5.4]

Where a *Deemed-to-Satisfy Provision* requires a building element to have an FRL, it must be determined in accordance with Specifications 1 and 2.

A5G6 Fire hazard properties

[2019: A5.5]

Where a *Deemed-to-Satisfy Provision* requires a building component or assembly to have a *fire hazard property* it must be determined as follows:

- For *average specific extinction area*, *critical radiant flux* and *Flammability Index*, as defined in Specifications 1 and 2.
- For *Smoke-Developed Index* and *Spread-of-Flame Index*, in accordance with Specification 3.
- For a material's *group number* or *smoke growth rate index* ($SMOGR_{RC}$), in accordance with S7C4(2).

A5G7 Resistance to the incipient spread of fire

[2019: A5.6]

A ceiling is deemed to have a *resistance to the incipient spread of fire* to the space above itself if—

- it is identical with a prototype that has been submitted to the *Standard Fire Test* and the *resistance to the incipient spread of fire* achieved by the prototype is confirmed in a report from an *Accredited Testing Laboratory* that—
 - describes the method and conditions of the test and form of construction of the tested prototype in full; and

- (ii) certifies that the application of restraint to the prototype complies with the *Standard Fire Test*; or
- (b) it differs in only a minor degree from a prototype tested under (a) and the *resistance to the incipient spread of fire* attributed to the ceiling is confirmed in a report from an *Accredited Testing Laboratory* that—
 - (i) certifies that the ceiling is capable of achieving the *resistance to the incipient spread of fire* despite the minor departures from the tested prototype; and
 - (ii) describes the materials, construction and conditions of restraint that are necessary to achieve the *resistance to the incipient spread of fire*.

A5G8 Labelling of Aluminium Composite Panels

[2019: A5.7]

An *Aluminium Composite Panel* must be labelled in accordance with SA TS 5344.

DRAFT

Part A6 Building classification

Introduction to this Part

The NCC groups buildings and structures by the purpose for which they are designed, constructed or adapted to be used, rather than by the function or use they are put to, assigning each type of building or structure with a classification. This Part explains how each building classification is defined and used in the NCC.

The building classifications are labelled “Class 1” through to “Class 10”. Some classifications also have sub-classifications, referred to by a letter after the number (e.g. Class 1a).

The technical building requirements for Class 2 to 9 buildings are mostly covered by Volume One of the NCC and those for Class 1 and 10 are mostly covered by Volume Two of the NCC. Volume Three of the NCC covers *plumbing* and *drainage* requirements for all building classifications.

A building may have parts that have been designed, constructed or adapted for different purposes. In most cases, each of these parts is a separate classification. A building (or part of a building) may also have more than one such purpose and may be assigned more than one classification.

Governing Requirements

A6G1 Determining a building classification

[2019: A6.0]

- (1) The classification of a building or part of a building is determined by the purpose for which it is designed, constructed or adapted to be used.
- (2) Each part of a building must be classified according to its purpose and comply with all the appropriate requirements for its classification.
- (3) A room that contains a mechanical, thermal or electrical facility or the like that serves the building must have the same classification as the major part or principal use of the building or *fire compartment* in which it is situated.
- (4) Unless another classification is more suitable an *occupiable outdoor area* must have the same classification as the part of the building to which it is associated.

Exemptions:

- (1) For A6G1(1) where a part of a building has been designed, constructed or adapted for a different purpose and is less than 10% of the *floor area* of the *storey* it is situated on, the classification of the other part of the *storey* may apply to the whole *storey*.
- (2) A6G1(3) does not apply to an *electricity network substation*.

Limitations:

Exemption (1) does not apply where the minor use of a building is a laboratory or a Class 2, 3, ~~or 4~~ or *9b early childhood centre* part of a building.

Explanatory Information:

Classification is a process for understanding risks in a building or part, according to its use. It must be correctly undertaken to achieve NCC aims as appropriate to each building in each circumstance.

It is possible for a single building to have parts with different classifications. Part of a building can also have more than one classification. Where there is any conflict between what requirements the part should comply with, the more stringent requirement applies.

Where it is unclear which classification should apply, *appropriate authorities* have the discretion to decide. They base their decision on an assessment of the building proposal.

They will look at what classification the building most closely resembles. They will also take into account the likely *fire load*, plus, the likely consequences of any risks to the safety, health and amenity of people using the building.

Appropriate authorities will also look at any relevant court decisions or determinations of the State or Territory body responsible for considering appeals on building classification matters.

It should be noted that appeals body determinations and, in some States and Territories, certain court decisions are usually not precedent creating. Such decisions are determined on a case-by-case basis.

It should also be noted that State and Territory authorities responsible for building regulatory matters may have issued advice, interpretations or guidelines to assist practitioners in applying the correct classification to a building or part. Advice on such matters should be sought from the relevant authority.

Under Exemption (1) to A6G1, if 10% or less of the *floor area* of a *storey* is used for a purpose which could be classified differently to the remainder of that *storey*, that part may be classified as being the same as the remainder. Laboratories and *sole-occupancy units* in Class 2, 3 or 4 parts are excluded from this concession (see Limitation to A6G1). The reason is that laboratories are considered to have a high *fire hazard* potential and classifying them with the remainder of the building could, in a majority of cases, endanger occupants of the other parts of the building which have a lower *fire hazard* potential. Also, the intent is not to allow *sole-occupancy units* in Class 2, 3 or 4 parts to be regarded as another Class such as Class 6 and then not have any fire or sound insulation between the units and any other classification which may have a high *fire load* and could endanger the occupants of the Class 2, 3 or 4 part.

If Exemption (1) to A6G1 is used, it should be remembered that it will still be necessary to use the occupant numbers in Volume One Table D2D18 for the particular use of the area. Likewise, the lighting and equipment levels, people occupancy and load profiles for the area of minor use for the purposes of Volume One Section J must be in accordance with the use of the area.

If the *storey* has a very large *floor area*, the 10% or less concession area may also be large, even though the rest of the building is classifiable as a building which ordinarily has a lower risk potential. An example of the application of this area concession could be as follows:

- If a single *storey* factory has an office that takes up 8% of the whole *storey's floor area*, the entire building (including the office) can be classified as being Class 8.
- However, if that office area takes up 12% of the *storey's floor area*, that area must be classified as Class 5, and the remainder of the building as Class 8.

Under A6G1(3) a plant room, machinery room, lift motor room or *boiler* room, have the same classification as the part of the building they are in. These kinds of rooms do not need to be ancillary or subordinate to the part of the building they are in, that is, the 10% criterion is not applicable.

There are specific provisions for these kinds of rooms. For example, Volume One Section C requires some of them to be fire separated from the remainder of the building (e.g. see C3D14 with regard to elements of the electricity supply system).

A6G2 Class 1 buildings

[2019: A6.1]

- (1) A Class 1 building is a dwelling.
- (2) Class 1 includes the following sub-classifications:
 - (a) Class 1a is one or more buildings, which together form a single dwelling including the following:
 - (i) A detached house.
 - (ii) One of a group of two or more attached dwellings, each being a building, separated by a *fire-resisting* wall, including a row house, terrace house, town house or villa unit.
 - (b) Class 1b is one or more buildings which together constitute—
 - (i) a boarding house, guest house, hostel or the like that—
 - (A) would ordinarily accommodate not more than 12 people; and
 - (B) have a total area of all floors not more than 300 m² (measured over the enclosing walls of the building or buildings); or
 - (ii) four or more single dwellings located on one allotment and used for short-term holiday accommodation.
- (3) See Figures A6G2a, A6G2b and A6G2c.

Figure A6G2a: Identification of Class 1 buildings

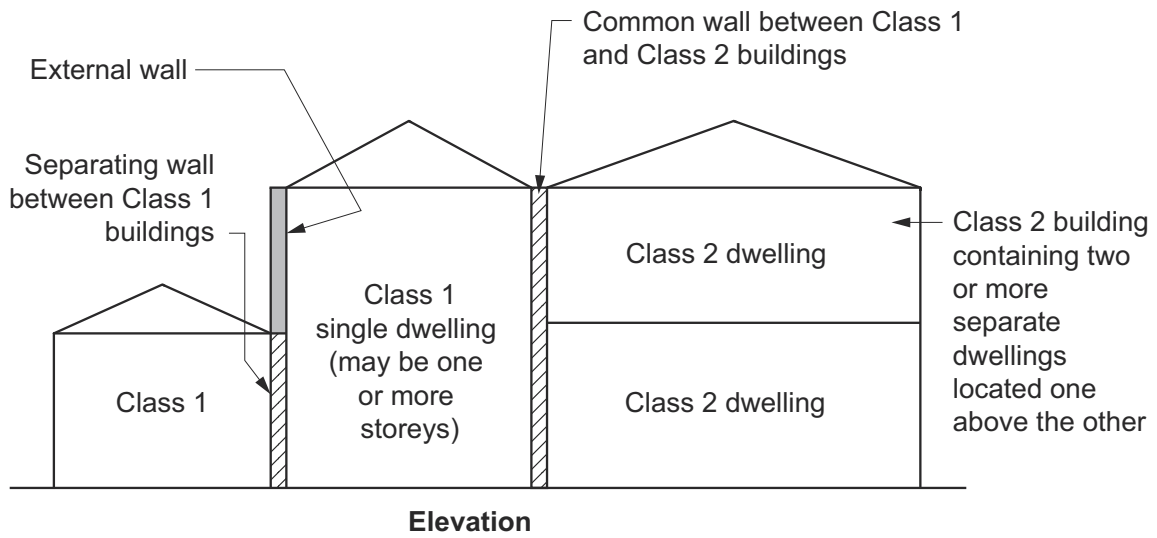
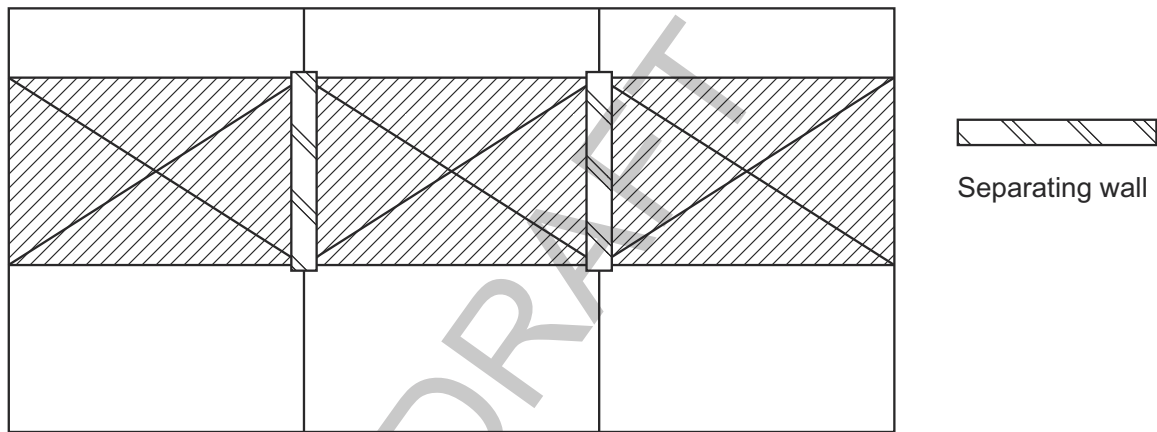
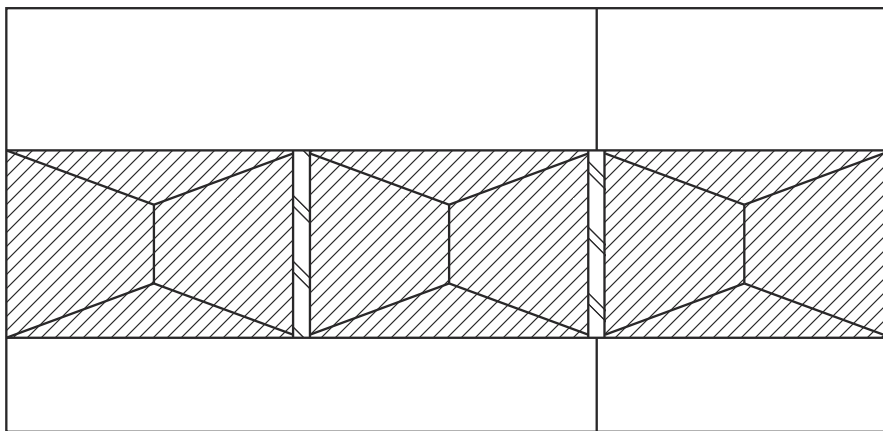


Figure A6G2b: Typical Class 1 building configurations



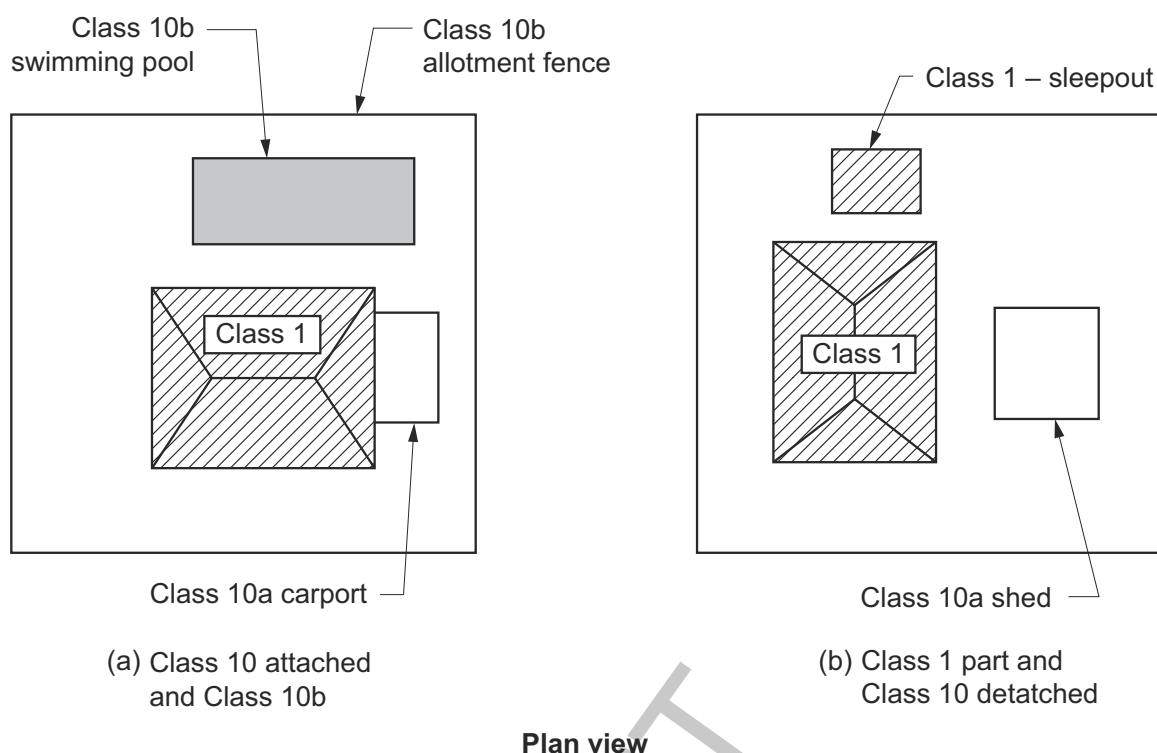
(a) 3 Class 1 buildings on 3 separate allotments



(b) 3 Class 1 buildings on 2 separate allotments

Plan view

Figure A6G2c: Domestic allotment — classification of buildings and structures



Limitations:

For A6G2, a Class 1 building cannot be located above or below another dwelling or another Class of building, other than a *private garage*.

Explanatory Information:

Class 1 buildings are covered in Volumes Two and Three of the NCC. Class 1 buildings are not located above or below another dwelling, or another class of building other than a *private garage*.

A *sole-occupancy unit* used for residential purposes located over another *sole-occupancy unit* used for residential purposes will always be a Class 2 or Class 3 building (depending on the circumstances). It cannot be a Class 1 building.

A single Class 1 dwelling can be made up of more than one building. For example, it may include what is ordinarily called a house, plus one or more habitable 'outbuildings' such as sleepouts. Note that a habitable building such as a sleepout cannot be classified as a Class 10 building.

The height or number of storeys of a Class 1 building makes no difference to its classification.

Class 1b buildings used for short-term holiday accommodation include cabins in caravan parks, tourist parks, farm stay, holiday resorts and similar tourist accommodation. This accommodation itself is typically rented out on a commercial basis for short periods and generally does not require the signing of a lease agreement. Short-term accommodation can also be provided in a boarding house, guest house, hostel, bed and breakfast accommodation or the like.

Unlike a Class 1b building described in A6G2(2)(a), a Class 1b building described in A6G2(2)(b) does not have any *floor area* limitation. Therefore, if 4 or more single dwellings are located on the one allotment and used for short-term holiday accommodation, each single dwelling would be classified as a Class 1b building regardless of the *floor area* of each dwelling or the combined *floor area* of all of the dwellings.

See also Volume One D4D2(3) which contains an explanation of what is considered be "one allotment".

The Class 1b classification can attract concessions applicable to Class 3 buildings. These concessions allow people to rent out rooms in a house, or run a bed and breakfast, without having to comply with the more stringent Class 3 requirements. The reasoning is that the smaller size of the building and its lower number of occupants represents reduced fire risks.

Apart from their use, the primary difference between Class 1a and Class 1b buildings is that the latter is required to have a greater number of smoke alarms and in some circumstances, access and features for people with a disability.

A6G3 Class 2 buildings

[2019: A6.2]

- (1) A Class 2 building is a building containing two or more *sole-occupancy units*.
- (2) Each *sole-occupancy unit* in a Class 2 building must be a separate dwelling.

Explanatory Information:

A Class 2 building is one that includes more than one dwelling, each of which is generally solely occupied by one or more people to the exclusion of others.

Such buildings must not be otherwise classified as a Class 1 or Class 3 building or Class 4 part. See explanatory Figure A6G3a for a typical configuration of Class 1 and Class 2 buildings.

Where a sole-occupancy residential unit is located above another sole-occupancy residential unit, the building containing the units can be either a Class 2 or a Class 3 building, depending on the other circumstances of the building proposal.

Class 2 buildings can be single *storey* attached dwellings. Where there is any common space below such dwellings, they are Class 2 (and cannot be Class 1) irrespective of whether the space below is a *storey* or not (see explanatory Figure A6G3b).

Class 2 buildings can be attached to buildings of another Class. The attached Class 2 buildings need not be attached to one another, and need not be more than a single *storey*.

When two or more dwellings are attached to another Class, they cannot be Class 4 parts, as any building can only contain one Class 4 dwelling.

Figure A6G3a (explanatory): Section showing a typical configuration of Class 1 and Class 2 buildings (with non-combustible roof coverings)

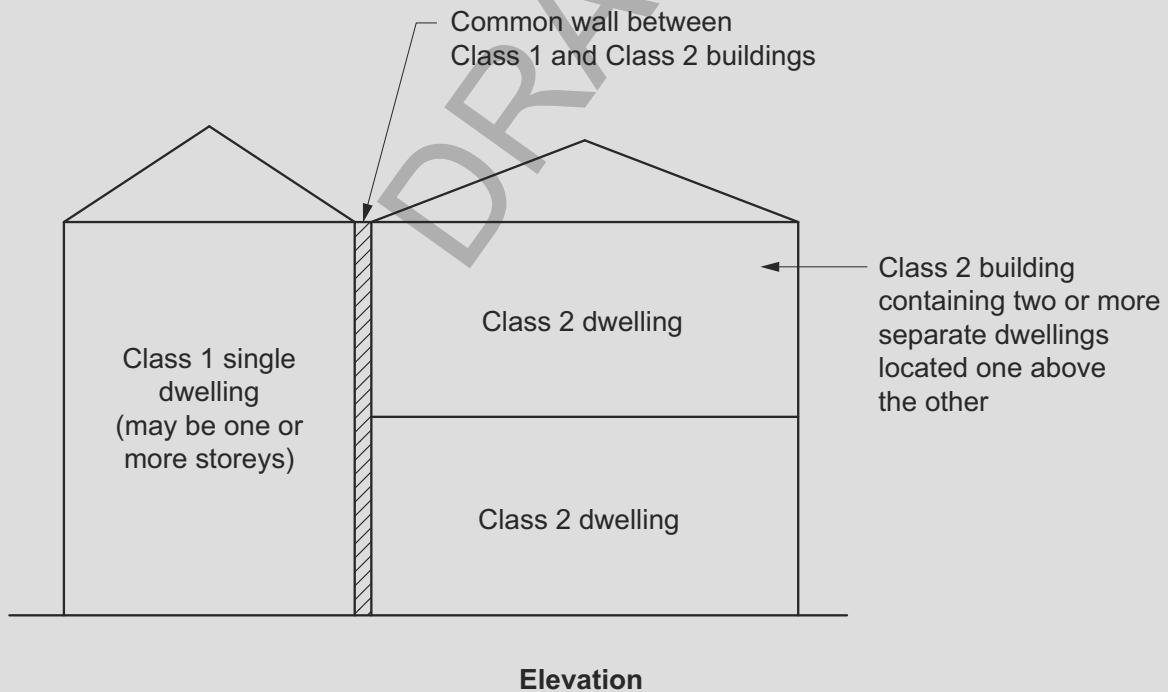
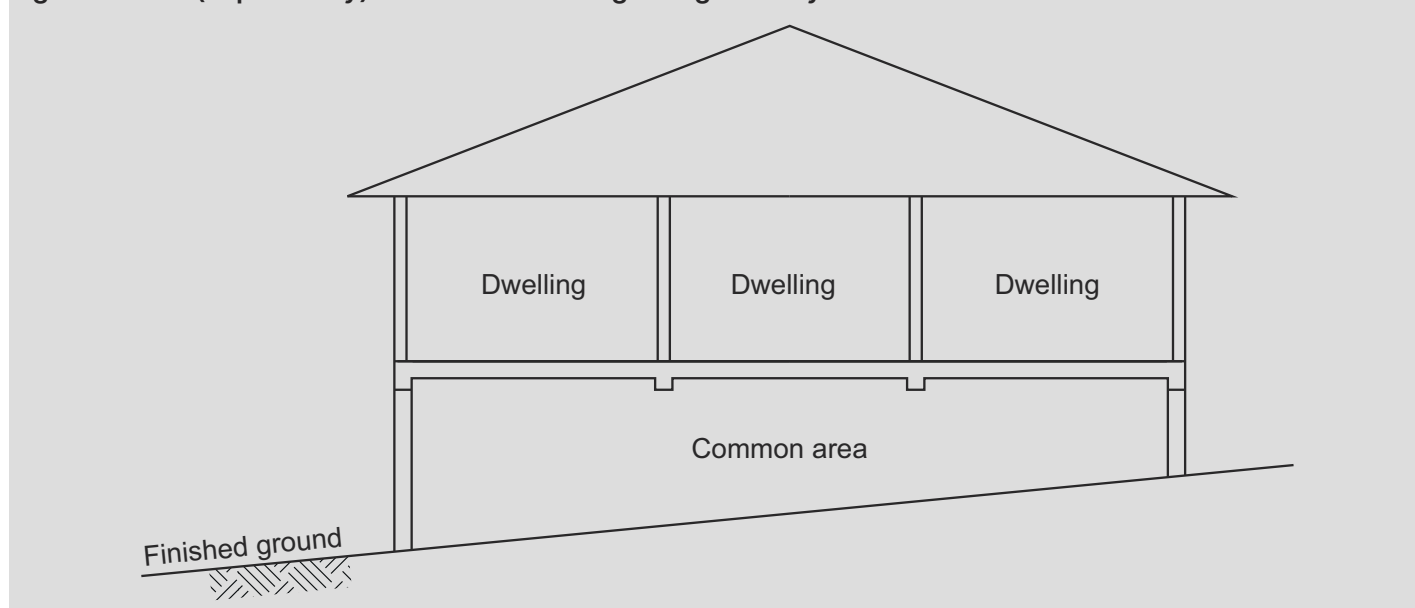


Figure A6G3b (explanatory): Elevation showing a single storey of Class 2 with a common area below



A6G4 Class 3 buildings

[2019: A6.3]

- (1) A Class 3 building is a residential building providing long-term or transient accommodation for a number of unrelated persons.
- (2) Class 3 buildings include the following:
 - (a) A boarding house, guest house, hostel, lodging house or backpacker accommodation.
 - (b) A residential part of a hotel or motel.
 - (c) A residential part of a *school*.
 - (d) Accommodation for the aged, children, or people with disability.
 - (e) A residential part of a *health-care building* which accommodates members of staff.
 - (f) A residential part of a *detention centre*.
 - (g) A *residential care building*.

Limitations:

For A6G4, a Class 3 building is not a Class 1 or 2 building but may be a mixture of Class 3 and another Class.

Explanatory Information:

Class 3 buildings provide accommodation for unrelated people. The length of stay is unimportant.

Some exceptions to this classification include: certain bed and breakfast accommodation, boarding houses, guest houses, hostels, or lodging houses and the like which fall within the concession provided for Class 1b buildings.

Also, any sized building can be classified as Class 1 or Class 2 if it is used to house any number of unrelated people who jointly own or rent it, or share it on a non-rental basis with an owner or tenant.

It is not unusual for a manager's, owner's or caretaker's dwelling attached to a Class 3 building to be thought of as a Class 4 part of the Class 3 building. However, a Class 4 part of a building can only be part of a Class 5-9 building.

Accordingly, such dwellings are either classified as Class 1, Class 2 or Class 3, depending on the circumstances of the building proposal. However, a building could be a mixture of Class 3 and another Class.

Class 3 buildings include—

- the residential parts of hotels and motels; and

- hotel or motel caretakers', managers' or owners' flats, noting that under certain circumstances such dwellings could be Class 1, Class 2 or Class 3 buildings; and
- dormitory accommodation, in schools or elsewhere, noting that a dormitory is generally (but not always) considered to be a *sole-occupancy unit*; and
- bed and breakfast accommodation, a boarding house, guest house, hostel, or lodging house; and
- backpackers' accommodation; and
- a building which houses elderly people or other people who require special care. (In some States or Territories it is not acceptable for a Class 1b building to be used to house elderly people or other people who require special care - it is recommended the local building regulatory body be consulted.); and
- workers' quarters, including shearers' or fruit pickers' accommodation, or hotel workers' accommodation.

A6G5 Class 4 buildings

[2019: A6.4]

Class 4 is a dwelling in a Class 5, 6, 7, 8 or 9 building if it is the only dwelling in the building.

Explanatory Information:

Class 4 classification applies to some types of accommodation located within a Class 5-9 building. The most common include a caretaker's flat within a building; and accommodation over or otherwise connected to a shop.

A Class 4 part cannot be located within a Class 1, Class 2 or Class 3 building. There can only be one Class 4 dwelling in a building. If there are two or more dwellings, they are Class 1, Class 2, or possibly Class 3. These Class 1, Class 2 or Class 3 parts need not be attached to one another, nor be more than a single *storey*.

Where a Class 4 part of a building is rented out for accommodation purposes, it retains its Class 4 classification. However, if any other part of the principal building is used for accommodation, for example, the attached shop is converted into an additional flat, both flats become classifiable as Class 2 or, depending on their use, possibly Class 3.

A6G6 Class 5 buildings

[2019: A6.5]

A Class 5 building is an office building used for professional or commercial purposes.

Explanatory Information:

Class 5 buildings include professional chambers or suites, lawyers' offices, government offices, advertising agencies and accountants' offices.

NSW A6G7

SA A6G7

A6G7 Class 6 buildings

[2019: A6.6]

- (1) A Class 6 building is a shop or other building used for the sale of goods by retail or the supply of services direct to the public.
- (2) Class 6 buildings include the following:
 - (a) an eating room, cafe, restaurant, milk or soft-drink bar.
 - (b) a dining room, bar area that is not an *assembly building*, shop or kiosk part of a hotel or motel.
 - (c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment.
 - (d) market or sale room, showroom, or *service station*.

Explanatory Information:

A Class 6 building is a building where goods or services are directly sold or supplied to the public. Examples of a Class 6 building may include—

- a place where food or drink may be purchased such as a café or restaurant; or
- a dining room, bar area that is not an *assembly building*, shop or kiosk part of a hotel or motel; or
- a hairdresser's or barber's shop, public laundry, veterinarian; or
- supermarket or sale room, florist, showroom, or *service station*.

Service stations are Class 6 buildings. These are outlets used for the servicing of cars and the selling of fuel or other goods. The expression '*service station*' is not intended to cover buildings where panel beating, auto electrical, muffler replacement, tyre replacement and the like are solely carried out. Such buildings should be classified as Class 6, Class 7 or Class 8 buildings as the *appropriate authority* sees fit.

A6G8 Class 7 buildings

[2019: A6.7]

- (1) A Class 7 building is a storage-type building.
- (2) Class 7 includes the following sub-classifications:
 - (a) Class 7a — a *carpark*.
 - (b) Class 7b — a building that is used for storage, or display of goods or produce for sale by wholesale.

Explanatory Information:

There are three basic types of Class 7 building. The first is a *carpark* as defined in the NCC. The second is a building used for storage, often referred to as a 'warehouse'. The third is a building used for the display of goods or produce for sale by wholesale. 'Wholesale' means sale to people in the trades or in the business of 'on-selling' goods and services to another party (including the public).

A6G9 Class 8 buildings

[2019: A6.8]

- (1) A Class 8 building is a process-type building.
- (2) Class 8 buildings include the following:
 - (a) A laboratory.
 - (b) A building in which the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce for sale takes place.

Explanatory Information:

The most common way to describe a Class 8 building is as a 'factory'. However, this can give a simplistic impression of the types of building which can fall within this classification.

For example—

- some laboratories, despite their often small size, have been included as Class 8 buildings principally because of their high *fire hazard*; and
- buildings used for altering or repairing (except *service stations*, which are specifically included in A6G7 as Class 6 buildings); and
- potteries; and
- food manufacturers (but not restaurants, which are specifically included in A6G7 as Class 6 buildings); and
- buildings used for the packing or processing of produce, such as a farm or horticultural building.

A6G10 Class 9 buildings

[2019: A6.9]

- (1) A Class 9 building is a building of a public nature.
- (2) Class 9 includes the following sub-classifications:
 - (a) Class 9a — a *health-care building* including any parts of the building set aside as laboratories, and includes a *health-care building* used as a *residential care building*.
 - (b) Class 9b — an *assembly building* including a trade workshop or laboratory in a primary or secondary *school*.
 - (c) Class 9c — a *residential care building*.

Exemptions:

A6G10(2)(b) excludes any parts of the building that are of another Class.

Explanatory Information:

Class 9a buildings are *health-care buildings*, including day-care surgeries or procedure units and the like. See definition of *health-care building*. Laboratories that are part of a Class 9a building are Class 9a, despite the general classification of laboratories as Class 8 buildings.

These buildings can include—

- Class 9b buildings are *assembly buildings*.
- theatres, cinemas and halls, churches, schools, early childhood centres, kindergartens, preschools and child-minding centres; and
- indoor cricket, tennis, basketball centres and sport stadiums; and
- nightclubs, discotheques, bar areas providing live entertainment and/or containing a dance floor, public halls, dance halls and other places of entertainment; and
- snooker halls; and
- bus and railway stations.

Regarding the Exemption to A6G10(2)(b), a building could be a mixture of Class 9b and another Class, or a Class 9b building could contain parts that are of another Class, but be taken as a Class 9b building because of [A6G1 Exemption \(1\)](#).

Class 9c buildings are *residential care buildings* that may contain residents who have various care level needs.

The Class 9c classification recognises that many residents progress through a continuum of care needs from low to high. Many older people enter residential care with low care needs (typically Class 3 facilities) but, as they age, require higher levels of care. In the past, such progression often necessitated the transfer of a hostel resident (Class 3) to a nursing home (Class 9a). This frequently had negative consequences for the health and well-being of the resident, for whom the hostel accommodation was home. It also led, at times, to the separation of couples with differing care needs.

Building designers should note that Class 3 buildings include hostels for the accommodation of the aged, and Class 9a buildings include nursing homes. It is important to be aware, however, that construction of Class 3 or 9a buildings may restrict the options available to the operators of a facility in relation to the profile of the residents they wish to accommodate. Where the potential exists for residents of varying care needs to be accommodated, consideration of the Class 9c provisions may be appropriate. The Class 9c classification allows for any mix of low and high care residents and is intended to allow the mix to change as the residents' care needs change over time, without the need to obtain any further consent or approval from the *appropriate authority*.

Multi-care level facilities are for residents who may require the full range of care services outlined by the Aged Care Act. Hence, it is not intended to restrict the resident type and provides maximum flexibility for service providers, residents and the community.

The NCC provisions for Class 9c buildings are based on minimal on duty on-site staff being available at any time. However, it is recognised that the staff numbers vary throughout the course of any one day, due to the care needs of the residents and the functioning of the facility. It is also recognised that the specific care needs of the residents may result in a greater minimum number of staff.

A6G11 Class 10 buildings and structures

[2019: A6.10]

- (1) A Class 10 building is a non-habitable building or structure.
- (2) Class 10 includes the following sub-classifications:
 - (a) Class 10a is a non-habitable building including a *private garage*, carport, shed or the like.
 - (b) Class 10b is a structure that is a fence, mast, antenna, retaining wall or free-standing wall or *swimming pool* or the like.
 - (c) Class 10c is a *private bushfire shelter*.

Explanatory Information:

Class 10a buildings are non-habitable buildings. See Figure A6G11 for an indication of some Class 10 building configurations.

Class 10b structures are non-habitable structures. There is no requirement for Class 10 buildings to be appurtenant to a building of any other Class, for example, a small shed standing on its own on an allotment and a toilet block in a park.

A habitable 'outbuilding' which is appurtenant to another building is generally part of that building. Again, habitable 'outbuildings' cannot be classified as Class 10 buildings.

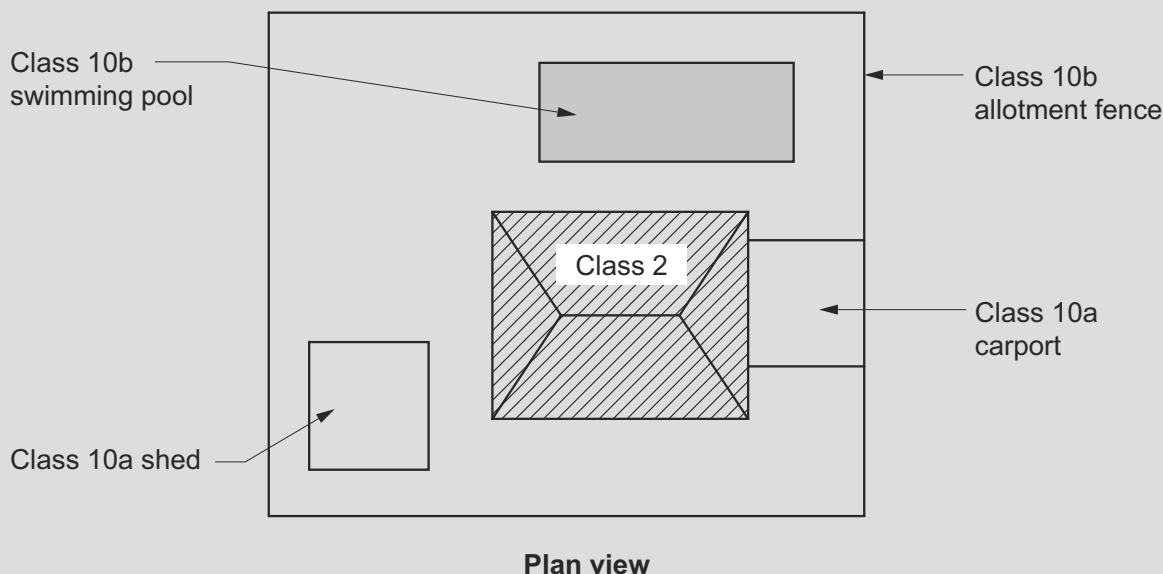
Typical outbuilding classifications include the following:

- A sleepout on the same allotment as a Class 1 building is part of the Class 1 building.
- A detached entertainment room on the same allotment as a Class 1 building, perhaps associated with a *swimming pool*, is part of the Class 1 building.
- A small toolshed, used for trade-related hobbies for non-commercial purposes or home repairs, on the same allotment as a Class 1 building, would be classified as a Class 10 building.

Provisions relating to Class 10c structures are only intended to address *private bushfire shelter* associated with a single Class 1a dwelling. These provisions are contained in Volume Two of the NCC.

Some States or Territories may exempt some Class 10 buildings or structures (often on the basis of height or size) from the need to have a building permit. Queries on this matter should be referred to the State or Territory body responsible for regulatory matters.

Figure A6G11 (explanatory): Examples of Class 10 buildings and structures



A6G12 Multiple classifications

[2019: A6.11]

A building (or part of a building) may be designed, constructed or adapted for multiple purposes and have more than one classification.

Applications:

For A6G12, a building (or part of a building) must comply with all the relevant requirements that apply to each of the classifications for that building (or part of a building).

Explanatory Information: Difficult classifications — Class 2 or Class 3?

There is a fine line between a Class 2 building containing apartments or flats and a Class 3 motel building with units containing bathroom, laundry and cooking facilities, which may both be made available for short term holiday rental. When does a Class 3 motel unit become a Class 2 holiday flat and vice versa?

In general, an assessment will be based on the most likely use of the building by *appropriate authorities*.

Class 3 buildings, where the occupants are generally unfamiliar with the building and have minimum control over the safety of the building, represent a higher risk level and therefore require higher safety levels. In a case where the classification is unclear, a decision should be made according to the perceived risks inherent in the use of the building.

In general, an assessment will be based on the most likely use of the building by *appropriate authorities*.

Class 3 buildings, where the occupants are generally unfamiliar with the building and have minimum control over the safety of the building, represent a higher risk level and therefore require higher safety levels. In a case where the classification is unclear, a decision should be made according to the perceived risks inherent in the use of the building.

Explanatory Information: Difficult classifications — Class 6 or Class 7?

Class 7 buildings include those used to sell goods on the wholesale market, whereas Class 6 buildings are used to sell goods to the public.

Some establishments claim to sell goods to both the wholesale and retail markets. As a rule, however, if the general public has access to the building, it is considered a 'shop', and therefore a Class 6 building.

Explanatory Information: Difficult classifications — Hotel bars: Class 6 or 9b?

As can be seen from the definition of a Class 6 building, it includes a hotel bar which is not an *assembly building*. The bar includes the bar area and associated standing and seating areas. This clarifies that the bar extends beyond the serving area to include standing and sitting areas where patrons may drink alcohol or other beverages and consume food. The exclusion of an *assembly building* means that a bar providing live entertainment or containing a dance floor is not considered to be Class 6, it must be considered as Class 9b. However, when that use is minor compared with the remainder of the bar, such as a piano bar or the like where patrons only listen to music and there is no dance floor, the *appropriate authority* should exercise judgement on the predominant use and therefore the appropriate classification of the bar.

A Class 9b building is an *assembly building* which is defined to include a building where people may assemble for entertainment, recreational or sporting purposes.

A building may have more than one classification (see A6G12).

Explanatory Information: Buildings used for farming purposes

Buildings used for farming-type purposes are often very diverse in nature, occupancy, use and size. In some States or Territories, *appropriate authorities* may classify farm buildings as Class 10a, which covers non-habitable buildings. They would only make this decision if a classification of Class 7 or Class 8 would not be more appropriate.

When making their decision they consider the building's size, purpose, operations and the extent to which people are employed in the building. For example, it may be appropriate to classify a shed which is used to store a tractor as a Class 10a building.

The NCC has definitions of *farm building* and *farm shed* which are certain Class 7 and 8 buildings used for farming

purposes. Concessions to specific *Deemed-to-Satisfy Provisions* apply to *farm buildings* and *farm sheds* in recognition of their often low risk features, and it is recommended that reference is made to the definitions of *farm building* and *farm shed* for further guidance which may assist determination of an appropriate NCC classification.

For example, if people are likely to be employed to stack materials/produce in a storage building or remove materials/produce from a storage building then a classification of Class 7b may be appropriate. Depending upon whether the criteria in the definition of *farm shed* or *farm building* have been met, the associated *Deemed-to-Satisfy Provisions* in NCC Volume One Part I3 may apply.

Similarly if people are likely to be employed to pack or process materials/produce within a building, or employed to feed, clean or collect produce from animals or plants within a building then a classification of Class 8 may be appropriate. Depending upon whether the criteria in the definition of *farm shed* or *farm building* have been met, the associated *Deemed-to-Satisfy Provisions* in NCC Volume One Part I3 may apply.

However identification of low *fire load*, low occupant risk and low risk of fire spread should not be used as justification for choosing a less stringent building classification for a building under the *Deemed-to-Satisfy Provisions*. For example, if the intended use of a building is to grow or store a large amount of tomatoes, such as a large greenhouse, and there is likely to be only one to two persons in the building at any time, it is considered inappropriate to classify the building as a Class 10a under the *Deemed-to-Satisfy Provisions* and a classification of Class 7 or Class 8 would be more appropriate.

The *Deemed-to-Satisfy Provisions* for a Class 7 or Class 8 *farm building* or *farm shed* do not prevent the ability to consider or develop a *Performance Solution* for a particular building where the requirements may not be considered appropriate or are viewed as too stringent. Similarly if a Class 7 or 8 building used for farming purposes does not meet all the criteria to be considered a *farm building* or *farm shed* under the *Deemed-to-Satisfy Provisions*, this would not limit the ability to develop a *Performance Solution* which could contain features similar to those allowed under the *Deemed-to-Satisfy Provisions* for *farm buildings* or *farm sheds*.

For example, if a Class 8 commercial poultry building meets all the criteria to be considered a farm building under the *Deemed-to-Satisfy Provisions* other than the maximum *floor area* criteria, a *Performance Solution* could be developed to demonstrate that the concessions for a farm building under the *Deemed-to-Satisfy Provisions* are appropriate.

In regards to a *farm building* or *farm shed* where the purpose of the building is to park farm vehicles when not in use, as well as perhaps clean or polish the vehicle(s), it may be appropriate that this type of building is classified as a Class 7a.

However, a number of *farm buildings* and *farm sheds* are often not only used for the storage of farm vehicles, but to store supplies such as fuel, grain or hay. A Class 7a classification may still be appropriate where the majority of the shed's space is intended to be designated for the parking of vehicles. However, it may be more appropriate to classify some types of buildings as Class 7b, rather than Class 7a where a mixed use shed is intended.

Under A6G12 each part of a building (including the entire building) may have more than one classification. This means, for example, that it is permissible to classify part of a building as a Class 6/7 building, or a Class 5/6 building, or whatever is appropriate.

It is expected that this approach may be taken by a builder who is uncertain of what the precise use of a building will be after its sale, or to maximise the flexibility of the building's use.

Under the Application to A6G12, where a building has more than one classification the more stringent Class requirements will apply.

Part A7 United buildings

Introduction to this Part

This Part explains how multiple buildings can be considered as a united building. Where adjacent buildings are joined through openings in walls, they need not meet additional requirements if they jointly comply with the NCC as a single building.

Governing Requirements

A7G1 United buildings

[2019: A7.0]

Buildings are deemed united when two or more buildings adjoining each other are connected and used as one building.

Applications:

- (1) For A7G1, two or more buildings are a united building if they are connected through openings in the walls dividing them and together comply with all the requirements of the NCC as though they are a single building.
- (2) A7G1 only applies to Class 2 to 9 buildings.

A7G2 Alterations in a united building

[2019: A7.1]

If, after *alterations* or any other building work, two or more of the buildings in A7G1 cease to be connected through openings in the dividing walls, each of those buildings not now connected must comply with all the requirements for a single building.

Explanatory Information:

It is not unusual for authorities to receive plans proposing the connecting of two or more buildings. Connecting buildings could be achieved by breaking openings through walls, or by joining the buildings by a tunnel, bridge or covered walkway.

When connected, if the buildings jointly comply with all the requirements of the NCC applying as if they were a single building, they become a united building.

United buildings are not *required* to comply with additional NCC provisions. For example, any new openings do not require any form of fire protection not *required* of a single building.

Note, however, an *external wall*, which as a result of an interconnection becomes an *internal wall*, must comply with the requirements for an *internal wall*.

Interconnected buildings that do not jointly comply with all the requirements applicable to a single building, remain as separate buildings.

This raises the possible need for fire doors, or other forms of protection to be fitted to connecting openings.

Explanatory Information: Multiple allotments or ownership

The NCC does not concern itself with actually prohibiting or permitting the uniting of buildings in separate ownership or on separate allotments. Such matters are dealt with by the relevant local bodies.

Explanatory Information: Example of connection by bridge

In this example, Building A is connected to Building B by bridge C. There are four different options for designing such a proposal.

The first is a united building:

A, B and C are considered as a single structure and comply with the NCC.

The second is three separate buildings:

A, B and C are a fire-source feature to each of the others, and are separated by fire walls with the openings protected at the points of connection. In this case, C may require independent support and separate egress to a road or open space, that is not through Buildings A or B. In this case, attention should also be paid to the length of the bridge, as regards distance of travel to an exit.

The third option is the bridge as a portion of Building A:

In this option, A and C are one building, meeting all requirements of the NCC as a single or united building. B is a separate building, with suitable fire separation, including fire-doors at the point of interconnection. Bridge C could be supported off Building A, but not off Building B.

The fourth option is having the bridge as a portion of Building B

In this option, B and C are one building, meeting all requirements of the NCC as a single or united building. A is a separate building, with suitable fire separation, including fire doors at the point of interconnection. Bridge C could be supported off Building B, but not off Building A.

In some cases, C will link A and B across a public road, including laneways and the like. Special approvals may be required from various *appropriate authorities*. However, in such cases—

- if C is supported by means other than off A and B, such support will generally only be permitted if there is no obstruction of the public road; and
- care will need to be taken in calculating the distance of travel to an exit if travel is required to be over C and the road is wide; and
- fire-separation may be necessary at each end of the bridge.
- If the last stipulation is the case, the following matters need consideration:
 - The bridge would probably need to be of fire-rated construction because *combustible* construction could provide a ready path for the transfer of fire, and *non-combustible* construction could, in a major fire, distort and collapse onto the road.
 - The designer needs to take care that the bridge does not negate the fire separation between the *storeys* of the building.

Part A8 Quantification of the fire safety Performance Requirements

Introduction to this Part

This Part includes the quantified metrics that must be used to interpret the fire safety Performance Requirements listed in A8G1 that are not quantified or say to the degree necessary. The degree necessary is the degree that achieves the requirements of this part.

Governing Requirements

A8G1 Application of Part

[New for 2022]

- (1) A8G2 of this Part applies to the interpretation of Performance Requirements C1P1, C1P2, C1P3, C1P4, C1P5, C1P6, C1P7, C1P8, C1P9, D1P4, D1P5, D1P6, D1P7, E1P1, E1P2, E1P3, E1P4, E1P6, E2P1, E2P2, E3P2, E4P1, E4P2, E4P3, G4P1, G4P2, G4P3, and G4P4.
- (2) A8G3 of this Part applies to the interpretation of Performance Requirements C1P1, C1P2, C1P3, C1P8, C1P9, and E1P4.
- (3) This Part does not apply where—
 - (a) a Performance Solution is achieved by a demonstrating that the solution is at least equivalent to the Deemed-to-Satisfy Provisions in accordance with A2G2(1)(b); or
 - (b) the Assessment Method used to assess a Performance Solution is shown to comply with the relevant Performance Requirements in accordance with A2G2(2)(d).

A8G2 Fire safety

[New for 2022]

As a result of a fire occurring within a building, the risk of exposure of occupants to untenable conditions must not exceed the values provided in Table A8G2a and Table A8G2b, with consideration of—

- (a) hazards, building characteristics and occupant characteristics including—
 - (i) function or use of the building; and
 - (ii) fire load; and
 - (iii) potential fire intensity; and
 - (iv) height of the building; and
 - (v) number of storeys; and
 - (vi) location in alpine areas; and
 - (vii) proximity to other property; and
 - (viii) size of any fire compartment/floor area; and
 - (ix) other elements providing structural support; and
 - (x) number, mobility and other occupant characteristics; and
 - (xi) travel distance; and
 - (xii) exit above and below ground; and
- (b) prevention/intervention measures against hazards as applicable including—
 - (i) control of linings, materials and assemblies to maintain tenable conditions for evacuation; and
 - (ii) occupant intervention using firefighting equipment (fire hose reels and fire extinguishers); and

- (iii) automatic fire suppression; and
- (iv) fire brigade intervention, including—
 - (A) fire brigade access; and
 - (B) fire hydrants; and
 - (C) fire control centres; and
 - (D) automatic notification of fire brigade; and
 - (E) emergency lifts; and
- (c) means of managing the consequences, including—
 - (i) maintaining building structural stability; and
 - (ii) avoiding spread of fire to exits; and
 - (iii) protection from spread of fire and smoke to allow for orderly evacuation as appropriate or as part of defend in place strategies or provisions of temporary refuges for occupants requiring assistance to evacuate; and
 - (iv) behaviour of concrete external walls in fire; and
 - (v) barrier protection from high hazard service equipment; and
 - (vi) protection of emergency equipment; and
 - (vii) fire protection of openings and penetrations; and
 - (viii) provision of exits; and
 - (ix) construction of exits; and
 - (x) provision of fire isolated exits; and
 - (xi) provisions for paths of travel to, through and from exits; and
 - (xii) evacuation lifts; and
 - (xiii) automatic warning for sleeping occupants; and
 - (xiv) safe evacuation routes; options for consideration include one or more of the following if necessary:
 - (A) smoke detection; and
 - (B) smoke management systems; and
 - (C) automatic suppression; and
 - (xv) visibility in an emergency including emergency lighting; and
 - (xvi) identification of exits including exit signage; and
 - (xvii) emergency warning and intercom systems.

Table A8G2a: Allowable individual risk of exposure to untenable conditions

<u>Building Class Group</u>	<u>Individual risk per annum (lower tolerable limit)</u>	<u>Individual risk per annum (upper tolerable limit)</u>
<u>Residential/care (building classification 2, 3, 4, 9a or 9c)</u>	5.0×10^{-6}	5.0×10^{-4}
<u>Other classes (building classification 5, 6, 7a, 7b, or 9b)</u>	1.0×10^{-6}	1.0×10^{-4}

Table A8G2b: Allowable societal risk of exposure to untenable conditions

<u>Number of people exposed to untenable conditions</u>	<u>Societal risk per annum (lower tolerable limit)</u>	<u>Societal risk per annum (upper tolerable limit)</u>
≥ 5	8.9×10^{-7}	8.9×10^{-5}
≥ 10	3.2×10^{-7}	3.2×10^{-5}
≥ 20	1.1×10^{-7}	1.1×10^{-5}

Number of people exposed to untenable conditions	Societal risk per annum (lower tolerable limit)	Societal risk per annum (upper tolerable limit)
≥50	2.8×10^{-8}	2.8×10^{-6}
≥100	1.0×10^{-8}	1.0×10^{-6}
≥200	3.5×10^{-9}	3.5×10^{-7}
≥500	8.9×10^{-10}	8.9×10^{-8}
≥1000	3.2×10^{-10}	3.2×10^{-8}

Explanatory Information:

If the lower tolerable limits (individual and societal) are not exceeded by the proposed *Performance Solution* the *individual* and *societal risk* criteria can be considered to be satisfied.

If the upper tolerable limits (individual or societal) are exceeded by the proposed *Performance Solution* the *individual* or *societal risk* criteria have not been satisfied and modifications to the proposed solution will be required.

If the *individual* and/or *societal risks* presented by the proposed *Performance Solution* lie between the lower and upper allowable risks the proposed *Performance Solution* can be considered to be satisfactory if it can be demonstrated that the *individual* and / or *societal risk* presented by the *Performance Solution* is less than or equal to that presented by a similar *Deemed-to-Satisfy* compliant *reference building* that is considered to represent a tolerable risk.

A8G3 Spread of fire

[New for 2022]

- (1) A building must avoid the spread of fire between buildings such that:
 - (a) the probability of a *reportable fire* in a building causing heat fluxes greater than the values listed Table A8G3a must not exceed 0.001 at the stated distance from the boundary on an adjacent allotment or at the distances between buildings on the same allotment; and
 - (b) the probability of a building not being able to *withstand* the heat flux in Table A8G3a for a period of 30 minutes must not exceed 0.01; and
 - (c) the probability that the external façade of a building cannot *withstand* the following exposures from *reportable fires* must not exceed 0.001:
 - (i) *Flames venting through an opening from an enclosure fire within the building.*
 - (ii) *Burning items adjacent to the structure such as a vehicle, waste bin, or collection of combustible rubbish depending on the use and access to adjacent areas.*
 - (iii) *A fire occurring on a balcony.*
- (2) A building must avoid the spread of fire within the building such that when a *reportable fire* occurs, the probability of fire spread does not exceed—
 - (a) 0.01 to spread outside of a *sole-occupancy unit* for Class 2, 3 and 4 buildings; and
 - (b) 0.01 to spread between *storeys*; and
 - (c) the values in Table A8G3b.

Table A8G3a: Maximum heat flux

Maximum heat flux(kW/m ²)	Distance from Boundary (m)	Distance between buildings on the same allotment (m)
80	0	0
40	1	2
20	3	6
10	6	12

Table A8G3b: Fire spread limits to manage fire spread

<u>Building Classification</u>	<u>Floor area</u>	<u>Volume</u>	<u>Maximum probability of spread beyond specified floor area and volume</u>
<u>5, 9b</u>	<u>3000m²</u>	<u>18000m³</u>	<u>0.01</u>
<u>6,7,8, 9a,9c</u>	<u>2000m²</u>	<u>12000m³</u>	<u>0.01</u>
<u>5-9</u>	<u>18000m²</u>	<u>21000m³</u>	<u>0.001</u>
<u>9a patient care areas and 9c</u>	<u>1000m²</u>	<u>=</u>	<u>0.01</u>

DRAFT

Specification 1 Fire-resistance of building elements

S1C1 Scope

[2019: Sch. 5: 1]

This Specification sets out the procedures for determining the FRL of building elements.

S1C2 Rating

[2019: Sch. 5: 2]

A building element meets the requirements of this Specification if—

- (a) it is listed in, and complies with Tables S1C2a to S1C2n of this Specification; or
- (b) it is identical with a prototype that has been submitted to the *Standard Fire Test*, or an equivalent or more severe test, and the FRL achieved by the prototype without the assistance of an active fire suppression system is confirmed in a report from an *Accredited Testing Laboratory* which—
 - (i) describes the method and conditions of the test and the form of construction of the tested prototype in full; and
 - (ii) certifies that the application of restraint to the prototype complied with the *Standard Fire Test*; or
- (c) it differs in only a minor degree from a prototype tested under (b) and the FRL attributed to the building element is confirmed in a report from an *Accredited Testing Laboratory* which—
 - (i) certifies that the building element is capable of achieving the FRL despite the minor departures from the tested prototype; and
 - (ii) describes the materials, construction and conditions of restraint which are necessary to achieve the FRL; or
- (d) it is designed to achieve the FRL in accordance with—
 - (i) AS/NZS 2327, AS 4100 and AS/NZS 4600 if it is a steel or composite structure; or
 - (ii) AS 3600 if it is a concrete structure; or
 - (iii) AS 1720.4 if it is a timber element other than *fire-protected timber*; or
 - (iv) AS 3700 if it is a masonry structure; or
- (e) the FRL is determined by calculation based on the performance of a prototype in the *Standard Fire Test* and confirmed in a report in accordance with S1C3; or
- (f) for *fire-protected timber*, it complies with Specification 10 where applicable.

Table S1C2a: FRLs Deemed to be achieved by walls — masonry

Masonry type	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Ashlar	-	-	-	-	300
Calcium silicate	See clause S1C2(d)(iv)				
Concrete					
Fired Clay					

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2b: FRLs Deemed to be achieved by walls — concrete

Concrete type	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
No fines	-	-	-	150	300
Prestressed	See clause S1C2(d)(iv)				
Reinforced					
Plain	-	-	-	150	170

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2c: FRLs Deemed to be achieved by walls — gypsum

Gypsum type	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Solid gypsum blocks	75	90	100	110	125
Gypsum — perlite or Gypsum vermiculite-plaster on metal lath and channel (non- <i>loadbearing</i> walls only)	50	50	65	-	-

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2d: FRLs Deemed to be achieved by concrete columns

Column type	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Prestressed	See clause S1C2(d)(ii)				
Reinforced					

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2e: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 3 sides

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Concrete Cast in-situ — <i>loadbearing</i>	25	30	40	55	75
Concrete Cast in-situ — non- <i>loadbearing</i> unplastered	25	30	40	50	75
Concrete Cast in-situ — non- <i>loadbearing</i> plastered 13 mm	25	25	30	40	50
Gypsum Cast in-situ	-	-	-	-	50
Gypsum — perlite or Gypsum-vermiculite plaster— sprayed to	20	25	35	50	55

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Gypsum — perlite or Gypsum-vermiculite plaster— sprayed on metal lath	20	20	25	35	45

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2f: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 3 sides and with column spaces filled

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Solid calcium-silicate masonry	50	50	50	50	65
Solid clay masonry	50	50	50	65	90
Solid concrete masonry	50	50	50	65	90
Solid gypsum blocks	50	50	50	50	65
Hollow terracotta blocks — plastered 13 mm	50	50	50	65	90

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2g: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 3 sides and with column spaces unfilled

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Solid calcium-silicate masonry	50	50	50	-	-
Solid clay masonry	50	50	65	-	-
Solid concrete masonry	50	50	65	-	-
Solid gypsum blocks	50	50	50	-	-
Hollow terracotta blocks — plastered 13 mm	50	50	65	-	-

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2h: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 4 sides

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/—/—	90/—/—	120/—/—	180/—/—	240/—/—
Concrete Cast in-situ — <i>loadbearing</i>	25	40	45	65	90
Concrete Cast in-situ — <i>non-loadbearing</i> unplastered	35	30	40	50	65
Concrete Cast in-situ — <i>non-loadbearing</i> plastered 13 mm	25	25	30	40	50
Gypsum Cast in-situ	-	-	-	-	50
Gypsum — perlite or Gypsum-vermiculite plaster —	25	30	40	55	65

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/–/–	90/–/–	120/–/–	180/–/–	240/–/–
Gypsum — perlite or Gypsum-vermiculite plaster — sprayed on metal lath	20	20	30	40	50

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2i: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 4 sides and with column spaces filled

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/–/–	90/–/–	120/–/–	180/–/–	240/–/–
Solid calcium-silicate masonry	50	50	50	65	75
Solid clay masonry	50	50	50	75	100
Solid concrete masonry	50	50	50	75	100
Solid gypsum blocks	50	50	50	65	75
Hollow terracotta blocks — plastered 13 mm	50	50	50	75	100

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2j: FRLs Deemed to be achieved by hot-rolled steel columns (including a fabricated column) exposed on no more than 4 sides and with column spaces unfilled

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/–/–	90/–/–	120/–/–	180/–/–	240/–/–
Solid calcium-silicate masonry	50	50	50	-	-
Solid clay masonry	50	50	65	-	-
Solid concrete masonry	50	50	65	-	-
Solid gypsum blocks	50	50	50	-	-
Hollow terracotta blocks — plastered 13 mm	50	50	65	-	-

Table Notes:

For the purposes of this table, each element must meet the requirements of [Specification 2](#).

Table S1C2k: FRLs Deemed to be achieved by concrete beams

Concrete type	Minimum thickness (mm) of principal material for FRLs				
	60/–/–	90/–/–	120/–/–	180/–/–	240/–/–
Prestressed	See clause S1C2(d)(ii)				
Reinforced					

Table S1C2l: FRLs Deemed to be achieved by hot-rolled steel beams (including an open-web joist, girder, truss, etc.) exposed on no more than 3 sides

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/–/–	90/–/–	120/–/–	180/–/–	240/–/–
Concrete — cast in-situ	25	30	40	50	65
Gypsum — perlite or Gypsum-vermiculite plaster —	20	25	35	50	55

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/-/-	90/-/-	120/-/-	180/-/-	240/-/-
Gypsum — perlite or Gypsum-vermiculite plaster — sprayed on metal lath	20	20	25	35	45

Table S1C2m: FRLs Deemed to be achieved by hot-rolled steel beams (including an open-web joist, girder, truss, etc.) exposed on 4 sides

Fire protection	Minimum thickness (mm) of principal material for FRLs				
	60/-/-	90/-/-	120/-/-	180/-/-	240/-/-
Concrete — cast in-situ	25	40	45	60	90
Gypsum — perlite or Gypsum-vermiculite plaster — sprayed to contour	20	30	40	55	65
Gypsum — perlite or Gypsum-vermiculite plaster — sprayed on metal lath	20	20	35	40	50

Table S1C2n: FRLs Deemed to be achieved by floor, roof or ceiling

Floor, roof or ceiling type	Minimum thickness (mm) of principal material for FRLs				
	60/60/60	90/90/90	120/120/120	180/180/180	240/240/240
Prestressed	See Clause S1C2(d)(ii)				
Reinforced					

S1C3 FRLs determined by calculation

[2019: Sch. 5: 3]

If the FRL of a building element is determined by calculation based on a tested prototype—

- (a) the building element may vary from the prototype in relation to—
 - (i) length and height if it is a wall; and
 - (ii) height if it is a column; and
 - (iii) span if it is a floor, roof or beam; and
 - (iv) conditions of support; and
 - (v) to a minor degree, cross-section and components; and
- (b) the report must demonstrate by calculation that the building element would achieve the FRL if it is subjected to the regime of the *Standard Fire Test* in relation to—
 - (i) *structural adequacy* (including deflection); and
 - (ii) *integrity*; and
 - (iii) *insulation*; and
- (c) the calculations must take into account—
 - (i) the temperature reached by the components of the prototype and their effects on strength and modulus of elasticity; and
 - (ii) appropriate features of the building element such as support, restraint, cross-sectional shape, length, height, span, slenderness ratio, reinforcement, ratio of surface area to mass per unit length, and fire protection; and
 - (iii) features of the prototype that influenced its performance in the *Standard Fire Test* although these features may not have been taken into account in the design for dead and live load; and
 - (iv) features of the conditions of test, the manner of support and the position of the prototype during the test, that might not be reproduced in the building element if it is exposed to fire; and

- (v) the design load of the building element in comparison with the tested prototype.

S1C4 Interchangeable materials

[2019: Sch. 5: 4]

- (1) Concrete and plaster — An FRL achieved with any material of Group A, B, C, D or E as an ingredient in concrete or plaster, applies equally when any other material of the same group is used in the same proportions:
- (a) Group A: any portland cement.
 - (b) Group B: any lime.
 - (c) Group C: any dense sand.
 - (d) Group D: any dense calcareous aggregate, including any limestone or any calcareous gravel.
 - (e) Group E: any dense siliceous aggregate, including any basalt, diorite, dolerite, granite, granodiorite or trachyte.
- (2) Perlite and vermiculite — An FRL achieved with either gypsum-perlite plaster or gypsum-vermiculite plaster applies equally for each plaster.

S1C5 Columns covered with lightweight construction

[2019: Sch. 5: 5]

If the *fire-resisting* covering of a steel column is *lightweight construction*, the construction must comply with [Volume One](#) C2D9 and C4D17.

S1C6 Non-loadbearing elements

[2019: Sch. 5: 6]

If a non-*loadbearing* element is able to be used for a purpose where the *Deemed-to-Satisfy Provisions* prescribe an FRL for *structural adequacy*, *integrity* and *insulation*, that non-*loadbearing* element need not comply with the *structural adequacy* criteria.

Specification 2 Descriptions of elements referred to in Specification 1

S2C1 Scope

[New for 2022]

This Specification sets out the descriptions of elements referred to in Tables S1C2a to S1C2n of Specification 1.

S2C2 **Mortar for masonry**

[2019: Sch. 5 (Annex): 1.1]

Masonry units of ashlar, calcium silicate, concrete or fired clay (including terracotta blocks) must be laid in cement mortar or composition mortar complying with the relevant provisions of AS 3700.

S2C3 **Gypsum blocks**

[2019: Sch. 5 (Annex): 1.2]

Gypsum blocks must be laid in gypsum-sand mortar or lime mortar.

S2C4 **Gypsum-sand mortar and plaster**

[2019: Sch. 5 (Annex): 1.3]

Gypsum-sand mortar and gypsum-sand plaster must consist of either—

- (a) not more than 3 parts by volume of sand to 1 part by volume of gypsum; or
- (b) if lime putty is added, not more than 2.5 parts by volume of sand to 1 part by volume of gypsum and not more than 5% of lime putty by volume of the mixed ingredients.

S2C5 **Gypsum-perlite and gypsum-vermiculite plaster**

[2019: Sch. 5 (Annex): 1.4]

Gypsum-perlite or gypsum-vermiculite plaster must be applied—

- (a) in either one or 2 coats each in the proportions of 1 m³ of perlite or vermiculite to 640 kg of gypsum if the *required* thickness of the plaster is not more than 25 mm; and
- (b) in 2 coats if the *required* thickness is more than 25 mm, the first in the proportions of 1 m³ of perlite or vermiculite to 800 kg of gypsum and the second in the proportions of 1 m³ of perlite or vermiculite to 530 kg of gypsum.

S2C6 **Plaster of cement and sand or cement, lime and sand**

[2019: Sch. 5 (Annex): 1.5]

Plaster prescribed in Tables S1C2a to S1C2n—

- (a) must consist of cement and sand or cement, lime and sand; and
- (b) may be finished with gypsum, gypsum-sand, gypsum-perlite or gypsum-vermiculite plaster or with lime putty.

S2C7 Plaster reinforcement

[2019: Sch. 5 (Annex): 1.6]

If plaster used as fire protection on walls is more than 19 mm thick—

- (a) it must be reinforced with expanded metal lath that—
 - (i) has a mass per unit area of not less than 1.84 kg/m²; and
 - (ii) has not fewer than 98 meshes per metre; and
 - (iii) is protected against corrosion by galvanising or other suitable method; or
- (b) it must be reinforced with 13 mm x 13 mm x 0.7 mm galvanised steel wire mesh securely fixed at a distance from the face of the wall of not less than $\frac{1}{3}$ of the total thickness of the plaster.

S2C8 Ashlar stone masonry

[2019: Sch. 5 (Annex): 2]

Ashlar masonry must not be used in a part of the building containing more than 2 *storeys*, and must not be of—

- (a) aplite, granite, granodiorite, quartz dacite, quartz diorite, quartz porphyrite or quartz porphyry; or
- (b) conglomerate, quartzite or sandstone; or
- (c) chert or flint; or
- (d) limestone or marble.

S2C9 Dimensions of masonry

[2019: Sch. 5 (Annex): 3]

The thicknesses of masonry of calcium-silicate, concrete and fired clay are calculated as set out in S2C10 to S2C12.

S2C10 Solid units

[2019: Sch. 5 (Annex): 3.1]

For masonry in which the amount of perforation or coring of the units does not exceed 25% by volume (based on the overall rectangular shape of the unit) the thickness of the wall must be calculated from the manufacturing dimensions of the units and the specified thickness of the joints between them as appropriate.

S2C11 Hollow units

[2019: Sch. 5 (Annex): 3.2]

For masonry in which the amount of perforation or coring of the units exceeds 25% by volume (based on the overall rectangular shape of the unit) the thickness of the wall must be calculated from the equivalent thicknesses of the units and the specified thickness of the joints between them as appropriate.

S2C12 Equivalent thickness

[2019: Sch. 5 (Annex): 3.3]

The equivalent thickness of a masonry unit is calculated by dividing the net volume by the area of one vertical face.

S2C13 Height-to-thickness ratio of certain walls

[2019: Sch. 5 (Annex): 5]

The ratio of height between lateral supports to overall thickness of a wall of ashlar, no-fines concrete, unreinforced concrete, solid gypsum blocks, gypsum-perlite or gypsum-vermiculite plaster on metal lath and channel, must not exceed—

- (a) 20 for a *loadbearing* wall; or
- (b) 27 for a non-*loadbearing* wall.

S2C14 Walls

[2019: Sch. 5 (Annex): 6.1]

If a wall of ashlar, solid gypsum blocks or concrete is plastered on both sides to an equal thickness, the thickness of the wall for the purposes of Tables S1C2a to S1C2n (but not for the purposes of S2C5) may be increased by the thickness of the plaster on one side.

S2C15 Columns

[2019: Sch. 5 (Annex): 6.2]

- (1) Where Tables S1C2a to S1C2n indicate that column-protection is to be plastered, the tabulated thicknesses are those of the principal material.
- (2) The thicknesses referred to in (1) do not include the thickness of plaster, which must be additional to the listed thickness of the material to which it is applied.

S2C16 Walls

[2019: Sch. 5 (Annex): 7.1]

In walls fabricated of gypsum-perlite or gypsum-vermiculite plaster on metal lath and channel—

- (a) the lath must be securely wired to each side of 19 mm x 0.44 kg/m steel channels (used as studs) spaced at not more than 400 mm centres; and
- (b) the gypsum-perlite or gypsum-vermiculite plaster must be applied symmetrically to each exposed side of the lath.

S2C17 Columns

[2019: Sch. 5 (Annex): 7.2]

- (1) For the fire protection of steel columns with gypsum-perlite or gypsum-vermiculite on metal lath—
 - (a) the lath must be fixed at not more than 600 mm centres vertically to steel furring channels, and—
 - (i) if the plaster is to be 35 mm thick or more — at least 12 mm clear of the column; or
 - (ii) if the plaster is to be less than 35 mm thick — at least 6 mm clear of the column; or
 - (b) the plaster may be applied to self-furring lath with furring dimples to hold it not less than 10 mm clear of the column.
- (2) For the purposes of (1), the thickness of the plaster must be measured from the back of the lath.

S2C18 Beams

[2019: Sch. 5 (Annex): 7.3]

For the fire protection of steel beams with gypsum-perlite or gypsum-vermiculite on metal lath—

- (a) the lath must be fixed at not more than 600 mm centres to steel furring channels and at least 20 mm clear of the steel; and
- (b) the thickness of the plaster must be measured from the back of the lath.

S2C19 Columns

[2019: Sch. 5 (Annex): 8.1]

A column incorporated in or in contact on one or more sides with a wall of solid masonry or concrete at least 100 mm thick may be considered to be exposed to fire on no more than 3 sides.

S2C20 Beams

[2019: Sch. 5 (Annex): 8.2]

A beam, open-web joist, girder or truss in direct and continuous contact with a concrete slab or a hollow block floor or roof may be considered to be exposed to fire on no more than 3 sides.

S2C21 Filling of column spaces

[2019: Sch. 5 (Annex): 9]

- (1) The spaces between the fire-protective material and the steel (and any re-entrant parts of the column itself) must be filled solid with a fire-protective material like concrete, gypsum or grout.
- (2) The insides of hollow sections, including pipes, need not be filled.

S2C22 Hollow terracotta blocks

[2019: Sch. 5 (Annex): 10]

The proportion of cored holes or perforations in a hollow terracotta block (based on the overall rectangular volume of the unit) must not exceed the following:

- (a) For blocks up to 75 mm thick — 35%.
- (b) For blocks more than 75 mm but not more than 100 mm thick — 40%.
- (c) For blocks more than 100 mm — 50%.

S2C23 Masonry

[2019: Sch. 5 (Annex): 11.1]

Masonry of calcium-silicate, fired clay and concrete for the protection of steel columns must have steel-wire or mesh reinforcement in every second course and lapped at the corners.

S2C24 Gypsum blocks and hollow terracotta blocks

[2019: Sch. 5 (Annex): 11.2]

Gypsum blocks and hollow terracotta blocks for the protection of steel columns must have steel-wire or mesh reinforcement in every course and lapped at corners.

S2C25 Structural concrete and poured gypsum

[2019: Sch. 5 (Annex): 11.3]

If a steel column or a steel beam is to be protected with structural concrete or poured gypsum, the concrete or gypsum must be reinforced with steel-wire mesh or steel-wire binding placed about 20 mm from its outer surface, and—

- (a) for concrete or gypsum less than 50 mm thick, the steel wire must be—
 - (i) at least 3.15 mm in diameter; and
 - (ii) spaced at not more than 100 mm vertically; or
- (b) for concrete or gypsum not less than 50 mm thick, the steel wire must be either—
 - (i) of a diameter and spacing in accordance with (a); or
 - (ii) at least 5 mm in diameter and spaced at not more than 150 mm vertically.

S2C26 Gypsum-perlite or gypsum-vermiculite plaster sprayed to contour

[2019: Sch. 5 (Annex): 11.4]

- (1) If a steel column or steel beam is protected with either gypsum-perlite or gypsum-vermiculite plaster sprayed to contour and the construction falls within the limits of [Tables S2C26a](#) and [S2C26b](#), the plaster must be reinforced with—
 - (a) expanded metal lath complying with [S2C7](#); or
 - (b) galvanised steel wire mesh complying with [S2C7](#).
- (2) The reinforcement must be placed at a distance from the face of the plaster of at least 1/3 of the thickness of the plaster and must be securely fixed to the column or beam at intervals of not more than the relevant listing in [Tables S2C26a](#) and [S2C26b](#).
- (3) For the purposes of [Tables S2C26a](#) and [S2C26b](#)—
 - (a) “vertical” includes a surface at not more than 10° to the vertical; and
 - (b) “horizontal” includes a surface at not more than 10° to the horizontal; and
 - (c) “underside” means the underside of any horizontal or non-vertical surface.

Table S2C26a: Reinforcement of gypsum-perlite or gypsum-vermiculite plaster sprayed to contour — vertical members with H or I cross-section

Surface to be protected	Reinforcement required if smaller dimension of surface exceeds (mm)	Max spacing of fixings of the mesh to surface (mm)
Vertical	450	450
Non-vertical	300	300
Underside	300	300
Upper side of a horizontal surface	Not required	N/A

Table S2C26b: Reinforcement of gypsum-perlite or gypsum-vermiculite plaster sprayed to contour — vertical members with other shapes

Surface to be protected	Reinforcement required if smaller dimensions of surface exceeds (mm)	Max spacing of fixings of the mesh to surface (mm)
Vertical	Any size	450
Non-vertical	Any size	300
Undersize	Any size	300
Upper side of a horizontal surface	Not required	N/A

S2C27 Measurement of thickness of column and beam protection

[2019: Sch. 5 (Annex): 12.1]

The thickness of the fire protection to steel columns and steel beams (other than fire protection of gypsum-perlite or gypsum-vermiculite plaster sprayed on metal lath or sprayed to contour) is to be measured from the face or edge of the

steel, from the face of a splice plate or from the outer part of a rivet or bolt, whichever is the closest to the outside of the fire-protective construction, except that—

- (a) if the thickness of the fire protection is 40 mm or more, rivet heads may be disregarded; and
- (b) if the thickness of the fire protection is 50 mm or more—
 - (i) any part of a bolt (other than a high-tensile bolt) may be disregarded; and
 - (ii) a column splice plate within 900 mm of the floor may encroach upon the fire protection by up to a $\frac{1}{4}$ of the thickness of the fire protection; and
- (c) the flange of a column or beam may encroach by up to 12 mm upon the thickness of the fire protection at right angles to the web if—
 - (i) the column or beam is intended to have an FRL of 240/240/240 or 240/-/-; and
 - (ii) the flange projects 65 mm or more from the web; and
 - (iii) the thickness of the edge of the flange (inclusive of any splice plate) is not more than 40 mm.

DRAFT

Specification 3 Fire hazard properties

S3C1 Scope

[2019: Sch. 6: 1]

This Specification sets out the procedures for determining the *fire hazard properties* of assemblies tested to AS/NZS 1530.3.

Assemblies

S3C2 General requirement

[2019: Sch. 6: 2.1]

The *fire hazard properties* of assemblies and their ability to screen their core materials as *required* under *Specification 7* must be determined by testing in accordance with S3C3 to S3C6.

S3C3 Form of test

[2019: Sch. 6: 2.2]

Tests must be carried out in accordance with—

- (a) for the determination of the *Spread-of-Flame Index* and *Smoke-Developed Index* — AS/NZS 1530.3; and
- (b) for the determination of the ability to prevent ignition and to screen its core material from free air — AS 1530.4.

S3C4 Test specimens

[2019: Sch. 6: 2.3]

Test specimens must incorporate—

- (a) all types of joints; and
- (b) all types of perforations, recesses or the like for pipes, light switches or other fittings, which are proposed to be used for the member or assembly of members in the building.

S3C5 Concession

[2019: Sch. 6: 2.4]

S3C4 does not apply to joints, perforations, recesses or the like that are larger than those in the proposed application and have already been tested in the particular form of construction concerned and found to comply with the conditions of the test.

S3C6 Smaller specimen permitted

[2019: Sch. 6: 2.5]

A testing laboratory may carry out the test specified in S3C3(b) at pilot scale if a specimen (which must be not less than 900 mm x 900 mm) will adequately represent the proposed construction in the building, but the results of that test do not apply to construction larger than limits defined by the laboratory conducting the pilot examination.

Section B Water services

Part B1

Cold water services

Objectives

B1O1 Objective

Functional Statements

B1F1 Cold water supply

B1F2 Cold water service

B1F3 Fire sprinkler systems

Performance Requirements

B1P1 Cold w~~Water s~~Supply

B1P2 ~~Design, construction and installation~~Velocity

B1P3 Access and isolation

B1P4 Water efficiency

B1P5 Pressure

B1P6 Uncontrolled discharge

Deemed-to-Satisfy Provisions

B1D1 Deemed-to-Satisfy Provisions

B1D2 Water efficiency~~Sanitary flushing~~

B1D3~~4~~ Design, construction and installation~~General requirements~~

B1D4 Bushfire prone areas

B1D5 Cold water fire sprinkler systems

B1D6 Top-up lines

Part B2

Heated water services

Objectives

B2O1 Objective

Functional Statements

B2F1 Heated water supply

B2F2 Heated water installations

B2F3 Greenhouse gas emissions

Performance Requirements

B2P1 Heated w~~Water~~ supply

B2P2 Scald Prevention~~Temperature~~

B2P3 Velocity~~Design, construction and installation~~

B2P4 Access and isolation

B2P5 Pressure relief and temperature limitation

B2P6 Legionella control

B2P7 Energy use and source

B2P8 Temperature

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B2P9	Pressure
B2P10	Uncontrolled discharge
B2P11	Water efficiency

Verification Methods

B2V1	Greenhouse gas intensity of a water heater
B2V2	Heated water storage temperature

Deemed-to-Satisfy Provisions

B2D1	Deemed-to-Satisfy Provisions
B2D2	Water heater in a heated water supply system
B2D3	Layout of taps
B2D4	Maximum flow rates for heated water outlets Water efficiency
B2D5	Maximum delivery temperature
B2D6	Temperature control devices
B2D7	Heated water storage
B2D8	Legionella control
B2D9	Design, construction and installation General requirements
B2D10	Bushfire prone areas
B2D11	Solar heated water

Part B3

Non-drinking water services

Objectives

B3O1	Objective
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Functional Statements

B3F1	Non-drinking water supply
B3F2	Non-drinking water installations

Performance Requirements

B3P1	Non-drinking w Water supply
B3P2	Identification
B3P3	Velocity Design, construction and installation
B3P4	Access and isolation
B3P5	Pressure
B3P6	Uncontrolled discharge

Deemed-to-Satisfy Provisions

B3D1	Deemed-to-Satisfy Provisions
B3D2	Distribution of non-drinking water
B3D3	Design, construction and installation General requirements
B3D4	Bushfire prone areas

Part B4

Fire-fighting water services

Objectives

B4O1	Objective
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Water services

Functional Statements

B4F1 Fire-fighting water supply

Performance Requirements

B4P1 [Flow rate and pressure](#) ~~Design, construction and installation~~

[B4P2](#) [Access and isolation](#)

[B4P3](#) [Fire-fighting water storage](#)

[B4P4](#) [Uncontrolled discharge](#)

Deemed-to-Satisfy Provisions

B4D1 Deemed-to-Satisfy Provisions

B4D2 General requirements

[B4D3](#) [Fire sprinkler systems](#)

[B4D4](#) [Fire hydrants](#)

[B4D5](#) [Fire hose reels](#)

[B4D6](#) [Bushfire prone areas](#)

Part B5

Cross-connection control

Objectives

B5O1 Objective

Functional Statements

B5F1 Design and installation

Performance Requirements

B5P1 Contamination control

Verification Methods

[B5V1](#) [Determination of individual and zone hazard ratings](#)

Deemed-to-Satisfy Provisions

B5D1 Deemed-to-Satisfy Provisions

B5D2 Drinking water service

B5D3 Non-drinking water service

B5D4 Fire-fighting water service

[B5D5](#) [Unprotected water service](#)

Part B6

Rainwater [services](#) ~~harvesting and use~~

Objectives

B6O1 Objective

Functional Statements

B6F1 Rainwater [service](#) ~~harvesting system~~

Performance Requirements

B6P1 [Pressure](#) ~~Stored rainwater~~

B6P2 [Velocity](#) ~~Rainwater harvesting system installation~~

B6P3 [Water efficiency](#) ~~Rainwater service~~

B6P4 [Access and isolation](#) ~~Identification~~

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[B6P5](#) [Identification](#)

[B6P6](#) [Uncontrolled discharge](#)

Deemed-to-Satisfy Provisions

B6D1 Deemed-to-Satisfy Provisions

B6D2 [Design, construction and installation](#) ~~Application of Part~~

B6D3 [Identification](#) ~~Collection of rainwater~~

B6D4 [Water efficiency](#) ~~Top-up lines~~

B6D5 [Access and isolation](#) ~~Buried and partially buried tanks~~

B6D6 ~~Rainwater pipework and outlets~~

Part [B7](#)

[Rainwater Storage](#)

Objectives

[B7O1](#) [Objective](#)

Functional Statements

[B7F1](#) [Rainwater storage](#)

Performance Requirements

[B7P1](#) [Contamination control](#)

[B7P2](#) [Uncontrolled discharge](#)

[B7P3](#) [Access and isolation](#)

[B7P4](#) [Identification](#)

Deemed-to-Satisfy Provisions

[B7D1](#) [Deemed-to-Satisfy Provisions](#)

[B7D2](#) [Design, construction and installation](#)

[B7D3](#) [Collection of rainwater](#)

[B7D4](#) [Access and isolation](#)

[B7D5](#) [Identification](#)

[B7D6](#) [Top-up lines](#)

Specification 41 **Cross-connection hazards**

S41C1 Scope

S41C2 Application

S41C3 Protection types and ~~h~~Hazard ~~r~~atings

S41C4 Individual protection

S41C5 Zone protection

S41C6 Containment protection

S41C7 Fire-fighting water services

Part B1 Cold water services

Introduction to this Part

This Part sets out the requirements for ~~any part of the design, construction, installation, replacement, repair, alteration and maintenance of any part of~~ a cold water service of a property that is connected to ~~a~~ the drinking water supply. It covers from the *point of connection* to the ~~points of discharge~~ points of discharge.

This part also applies to ~~e; a cold water service connected to a rainwater harvesting system;~~ a cold water service connected to an alternative water source; and residential fire sprinklers for buildings when installed in accordance with FPAA101D-Fire sprinkler systems Automatic Fire Sprinkler System Design and Installation - Drinking Water Supply.

Objectives

B1O1 Objective

[2019: BO1]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to the failure of a cold water installation; and
- (b) ensure that a cold water installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a cold water installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (e).

Functional Statements

B1F1 Cold water supply

[2019: BF1.1]

Sanitary fixtures, sanitary appliances and supply outlets provided with *drinking water* must have a safe and adequate piped cold water supply.

B1F2 Cold water service

[2019: BF1.2]

The cold water service must be conveyed through *plumbing* installations in a way that minimises any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment.

B1F3 Fire sprinkler systems

[New for 2022]

Residential fire sprinkler equipment must be provided with adequate water for its intended purpose.

Performance Requirements

B1P1 ~~Cold w~~Water ~~s~~Supply

[2019: BP1.1]

A cold water service must be connected to a *drinking water* supply.

Applications:

- (1) B1P1 only applies to cold water supplied for human consumption, food preparation, food utensil washing or personal hygiene.
- (2) B1P1 applies to automatic fire sprinkler systems when installed in accordance with FPAA101D Automatic Fire Sprinkler System Design and Installation - Drinking Water Supply.

Explanatory Information: Unintentional heating of cold water services

1. Where installed in a location subjected to extreme summer temperatures (such as the roof space of a building), cold water services have the potential to become unintentionally heated. This can pose a hazard as the cold water supply may reach temperatures in excess of 45° Celsius, increasing the potential for scalding.
2. To reduce the likelihood of unintentional heating of cold water services, consideration should be given to—
 - a. avoiding long runs of pipework in location exposed to solar heat gain; or
 - b. applying insulation, either directly to the pipework, or by using additional ceiling insulation material between the pipework and the solar heat source.
3. Avoidance of unintentional heating of cold water services in known areas of extreme summer temperatures may also assist in reducing water usage through drawing off of water which has become excessively heated.

B1P2 ~~Design, construction and installation~~Velocity

[2019: BP1.2]

A cold water service must ensure that the pipework water velocity does not exceed 3m/s for more than 1% of the time that water is required during the annual peak hour.~~the following:~~

- ~~(a) Water is provided at required flow rates and pressures for the correct functioning of fixtures and appliances.~~
- ~~(b) Access for maintenance of mechanical components and operational controls.~~
- ~~(c) The system, appliances and devices can be isolated for testing and maintenance.~~
- ~~(d) The efficient use of drinking water.~~

Explanatory Information:

During the hour of heaviest usage in reticulated cold water services, a velocity of 3 m/s must not be exceeded for 99% of the time that any downstream fixtures are in use.

Explanatory Information: Unintentional heating of cold water services

~~Where installed in locations subjected to extreme summer temperatures (such as the roof space of a building), cold water services have the potential to become unintentionally heated. This can pose a hazard as the cold water supply may reach temperatures in excess of 45° Celsius, increasing the potential for scalding.~~

~~To reduce the likelihood of unintentional heating of cold water services, consideration should be given to—~~

- ~~(a) avoiding long runs of pipework in locations exposed to solar heat gain; or~~
- ~~(b) applying insulation, either directly to the pipework, or by using additional ceiling insulation material between the pipework and the solar heat source.~~

~~Avoidance of unintentional heating of cold water services in known areas of extreme summer temperatures may also~~

~~assist in reducing water usage through drawing off of water which has become excessively heated.~~

B1P3 **Access and isolation**

[2019: BP1.2]

- (1) A cold water service must ensure access for maintenance of mechanical components and operational controls.
- (2) A cold water service must ensure the system, appliances and devices can be isolated for testing and maintenance.

B1P4 **Water efficiency**

[2019: BP1.2]

A cold water service must ensure the efficient use of drinking water by—

- (a) limiting water usage from—
 - (i) a shower, basin, kitchen sink or laundry trough to a flow rate of not more than 9 l/m; and
 - (ii) a cistern or flushing valve to a flush volume of no more than 2.5 litres for each—
 - (A) single urinal stall; or
 - (B) 600mm length of a continuous urinal wall; and
 - (iii) a dual flush cistern or flushing valve that is connected to a water closet with a flush volume of—
 - (A) 6 and 3 litres; or
 - (B) 4.5 and 3 litres; or
- (b) water saving measures equivalent to or greater than those described in (a).

Exemptions:

The requirements of B1P4 do not apply to a vacuum water closet pan.

Applications:

The flush volumes of B1P4 may be within a tolerance of—

- (1) ±0.5 litres for the full flush of a 6/3 litre cistern; or
- (2) +0.5 litres for the reduced flush of a 6/3 litre cistern; or
- (3) ±0.2 litres for a 4.5/3 litre cistern.

B1P5 **Pressure**

[2019: BP1.2]

A cold water service must ensure working pressures at outlets are—

- (a) not less than 50kPa and not more than 500kPa; or
- (b) where working pressures outside the range specified in (a) are required, working pressures suitable for the correct functioning of the fixture or appliance.

B1P6 **Uncontrolled discharge**

[2019: BP1.2]

A cold water service must avoid failure or uncontrolled discharge.

Deemed-to-Satisfy Provisions

B1D1 Deemed-to-Satisfy Provisions

[2019: B1.1]

- (1) *Performance Requirement B1P1* is satisfied if the cold water service is connected to—
 - (a) the *Network Utility Operator's drinking water* supply; or
 - (b) an alternative *drinking water* supply.
- (2) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement B1P2* to *B1P6* is satisfied by complying with *BD2* to *B1D6*.
- (3) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with *A2G2(3)* and *A2G4(3)* as applicable.

B1D2 Water efficiency ~~Sanitary flushing~~

[2019: B1.2]

QLD B1D2(1)

- (1) Tapware used for a shower, basin, kitchen sink or laundry trough must be a minimum of 3 Star WELS rated and discharge no more than 9 litres per minute. ~~A cistern or flushing valve used for the purpose of flushing a water closet pan must have a dual flushing mechanism that, when operated, discharges—~~
 - (a) ~~for a 6/3 litre cistern—~~
 - (i) ~~not less than 5.5 litres and not more than 6.5 litres for a full flush; and~~
 - (ii) ~~not less than 3.0 litres and not more than 3.5 litres for a reduced flush; and~~
 - (a) ~~for a 4.5/3 litre cistern—~~
 - (i) ~~not less than 4.3 litres and not more than 4.7 litres for a full flush; and~~
 - (ii) ~~not less than 2.8 litres and not more than 3.2 litres for a reduced flush.~~
- (2) Cisterns or flushing devices for water closets must— ~~The volume of water discharged to a flush urinal must not exceed 2.5 litres for each—~~
 - (a) have a dual flushing mechanism; and
 - (b) be a minimum 3 Star WELS rating discharging no more than 6 litres or 4.5 litres for a full flush.
 - (a) ~~single urinal stall; or~~
 - (b) ~~600 mm length of a continuous urinal wall, or part thereof.~~
- (3) Cisterns or flushing devices for urinals must— ~~Automatic or set-cycle cisterns must not be installed.~~
 - (a) be a minimum 2 Star WELS rating discharging a volume of no more than 2.5 litres to a single urinal stall or no more than 600mm length of continuous urinal wall; and
 - (b) not be set-cycled or engaged by any method other than manual or use activation.

Applications:

- (1) B1D2(1) applies to outlets that provide cold water only. The Deemed-to-Satisfy Provisions for outlets that deliver a combination of cold water and heated water is B2D4.
- (2) The flush volumes of B1D2(2) and B1D2(3) for a—
 - (a) 6/3 litre cistern may be within the tolerance of—
 - (i) ±0.5 litres for the full flush; or
 - (ii) +0.5 litres for the reduced flush.
 - (b) 4.5/3 litre cistern may be within the tolerance of ±0.2 litres.

Exemptions:

- (1) The requirements of B1D2(1) do not apply to a shower intended to provide rapid drenching of a person for emergency purposes, such as chemical removal.
- (2) The requirements of B1D2(2) and B1D2(3) do not apply to vacuum drainage systems.
- (3) The requirements of B1D2(3)(b) do not apply to a programmed solenoid operated flushing system if programmed to shut down during extended periods of non-occupancy of a building.

~~The requirements of B1D2(1) do not apply to a vacuum water closet pan.~~

Explanatory Information:

- Prior to installing a programmed solenoid operated flushing system, further advice should be sought from the Authority having jurisdiction.
- Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic. A programmed solenoid operated flushing system may be used if programmed to shut down during extended periods of non-occupancy of a building. Prior to installing this type of system further advice should be sought from the authority having jurisdiction. Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic.
- AS 6400 Water Efficient Products - Rating and labelling, provides the basis for the rating and labelling of a range of products under the mandatory Water Efficiency Labelling and Standards (WELS) Scheme. A programmed solenoid operated flushing system may be used if programmed to shut down during extended periods of non-occupancy of a building. Prior to installing this type of system further advice should be sought from the authority having jurisdiction. Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic.
- B1D2 Water efficiency outlines the minimum level of water efficiency for certain plumbing products and fixtures, however the adoption of products and technologies of greater efficiency should be considered. A programmed solenoid operated flushing system may be used if programmed to shut down during extended periods of non-occupancy of a building. Prior to installing this type of system further advice should be sought from the authority having jurisdiction. Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic.

NSW B1D4

SA B1D4

TAS B1D4

VIC B1D4

B1D34 Design, construction and installation **General requirements**

[2019: B1.4]

~~A The design, construction, installation, replacement, repair, alteration and maintenance of cold water services~~ must be in accordance with AS/NZS 3500.1.

B1D4 Bushfire prone areas

[New for 2022]

A cold water service in designated bushfire prone areas must be in accordance with AS 3959.

B1D5 Cold water fire sprinkler systems

[2019:B4.2]

A fire-fighting water service in Class 2 and 3 buildings must be in accordance with FPAA101D, where applicable.

Explanatory Information:

[For all other fire-fighting water services, see Part B4.](#)

B1D6 Top-up lines

[2019: B6.3]

[A top-up line from a Network Utility Operator's drinking water supply must be in accordance with AS/NZS 3500.1.](#)

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to cold water services. These include, but may not be limited to, those listed in Table B1.

Table B1: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Excavations for pipework adjacent to a building and footings	B1 Structural provisions	H1 Structure
Termite management for attachments to buildings and penetrations through a slab		
Penetrations for pipework through a vapour barrier		
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety
Fixtures and fittings in a wet area	F1 Damp and weatherproofing	H4 Health and amenity
Service pipework external to the building and penetrations through roof cladding in a bushfire prone area	G5 Construction in bushfire prone areas	H7 Ancillary provisions and additional construction requirements
Pipework sound insulation	F5 Sound transmission and insulation	H4 Health and amenity
Flues, chimneys, pipes, gas storage, domestic fuel tanks, cooling or heating appliances or other services	C4 Protection of openings	H3 Fire safety
Power supply to boiling and/or chilled water storage units	J6 Artificial lighting and power	Not applicable

Part B2 Heated water services

Introduction to this Part

This Part sets out the requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of~~ any part of a *heated water* service of a property that is connected to the *drinking water* supply. It covers from the *point of connection* to the *points of discharge*~~points of discharge~~.

Objectives

B201 Objective

[2019: BO2]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss of amenity*) due to the failure of a *heated water* installation; and
- (b) ensure that a *heated water* installation is suitable; and
- (c) conserve water; and
- (d) safeguard the environment; and
- (e) reduce greenhouse gas emissions; and
- (f) safeguard public and private infrastructure; and
- (g) ensure that a *heated water* installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (f).

Functional Statements

B2F1 Heated water supply

[2019: BF2.1]

Sanitary fixtures, sanitary appliances and supply outlets provided with *heated water* must have a safe and adequate piped *heated water* supply.

B2F2 Heated water installations

[2019: BF2.2]

The *heated water* supply must be conveyed through *plumbing* installations in a way that—

- (a) minimises any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment; and
- (b) facilitates the conservation of water.

B2F3 Greenhouse gas emissions

[2019: BF2.3]

To reduce greenhouse gas emissions, to the degree necessary, a *heated water* service is to—

- (a) be capable of efficiently using energy; and

- (b) obtain its heating energy from—
 - (i) a low greenhouse gas intensity energy source; or
 - (ii) an on-site *renewable energy* source; or
 - (iii) another process as reclaimed energy.

Explanatory Information:

1. The greenhouse gas intensity of energy sources vary. For example, natural gas has a low greenhouse gas intensity compared with electricity generated from coal.
2. For the purposes of B2F3(b), the *renewable energy* source must be on-site (not GreenPower) and includes, but is not limited to solar, wind, hydroelectric, wave action and geothermal.

Performance Requirements

B2P1 Heated w~~Water~~ supply

[2019: BP2.1]

A *heated water* service must be connected to a *drinking water* supply.

Applications:

B2P1 only applies to a *heated water* service for human consumption, food preparation, food utensil washing or personal hygiene.

B2P2 Scald Prevention~~Temperature~~

[2019: BP2.2]

Heated water supplied by a new *heated water* service must be delivered from the point of discharge of~~to~~ fixtures and appliances at a temperature which is unlikely to scald.

Applications:

B2P2 only applies to fixtures and appliances used primarily for personal hygiene.

B2P3 Velocity~~Design, construction and installation~~

[2019: BP2.3]

(4) A *heated water* service must ensure that the pipework water velocity is—e following:

- (a) in reticulated *heated water* systems up to 65°C, does not exceed 3 m/s for more than 1% of the time that water is required during the peak hour; and
- (b) in other *heated water* systems, is appropriate to the pipework material and water temperature.
- (a) ~~Heated water is provided at appropriate flow rates and temperatures for fixtures and appliances to function.~~
- (b) ~~Access for maintenance of mechanical components and operational controls.~~
- (c) ~~The system, appliances and devices can be isolated for testing and maintenance.~~

(2) ~~A *heated water* service must be designed, constructed and installed to avoid failure or uncontrolled discharge.~~

Explanatory Information:

During the hour of heaviest usage in reticulated heated water systems up to 65°C, a water velocity of 3 m/s must not be exceeded for 99% of the time that any downstream fixtures are in use.

B2P4 Access and isolation

[2019: BP2.3]

- (1) A heated *heated water* service must ensure access for maintenance of mechanical components and operational controls.
- (2) A *heated water* service must ensure the system, appliances and devices can be isolated for testing and maintenance.

B2P5 Pressure relief and temperature limitation

[2019: BP2.4]

Containers used for producing and/or storing *heated water* are to relieve excessive pressure and avoid flash steam production by ~~must~~—

- (a) relieving ~~relieve~~ excessive pressures; ~~and~~ that exceed the maximum working pressure of the container or 1400 kPa, whichever is the lesser; and ~~Limit temperatures to avoid flash steam production in the event of rupture.~~
- (b) Limiting water temperatures to a maximum of 99 °C; ~~or void flash steam production in the event of rupture.~~
- (c) other suitable means equivalent to or greater than (a) and (b).

Applications:

B2P5(a) has a tolerance of +5% or 14 kPa whichever is the greater.

B2P6 Legionella control

[2019: BP2.5]

Heated water must be stored and delivered under conditions which avoid the likelihood of the growth of a Legionella bacteria count greater than or equal to 10 Legionella colony forming units (cfu) per millilitre.

Explanatory Information:

A risk assessment should be undertaken for the control and management of Legionella in *Heated water* systems in aged care, health care and other similar facilities with high risk occupants.

QLD B2P7

B2P7 Energy use and source

[2019: BP2.6]

VIC B2P7(1)

- (1) A *heated water* service, including any associated distribution system and components, must ensure the efficient use of energy and water.

VIC B2P7(2)

- (2) Features in B2P7(1) must be appropriate to the following:
 - (a) The *heated water* service and its usage.
 - (b) The geographic location of the building.
 - (c) The location of the *heated water* service.
 - (d) The energy or water source.

NSW B2P7(3)

NT B2P7(3)

VIC B2P7(3)

- (3) A heated water service, including any associated distribution system and components, must obtain heating energy from one, or a combination, of the following~~Features in B2P7(1) must be appropriate to the following: The heated water service and its usage: The heated water service and its usage:~~
- (a) A source that has greenhouse gas intensity up to and including 100 g CO₂-e/MJ of thermal energy load~~The geographic location of the building.~~
 - (b) An on-site renewable energy source.~~The location of the heated water service.~~
 - (c) Another process as reclaimed energy.~~The energy or water source.~~

Applications:

B2P7(3) only applies to *heated water* services in the following:—

- (a) New Class 1 buildings.
- (b) New Class 10 buildings.

Explanatory Information:

1. Excessive ‘dead water’ draw-off, i.e. where cooled water from the supply pipe is drained off prior to delivery of *heated water*, can result in water and energy wastage.
2. To improve the efficiency of *heated water* systems, the design should consider factors such as the number of outlets, their purpose and expected typical usage, and the distance between the water heater and each of the outlets. The water heater should be positioned nearest to the most used outlets, or installed to provide consistent coverage of the building. Where this is not viable, the use of multiple water heaters or flow and return pipe loop may need to be considered.
3. B2P7(2) permits the energy source of the *heated water* service to be considered. This means that the net energy obtained from *renewable energy* sources such as solar, geothermal, wind, and biofuels may be considered as ‘free’ energy in calculating the energy consumption. Similarly, heat reclaimed from another ‘free’ source such as a by-product from co-generation type processes as well as other industrial processes, which could otherwise be rejected from the building, could be considered as ‘free’ energy in calculating the energy consumption.
4. The intent of B2P7(3) is to constrain the use of a high greenhouse gas intensity source of energy. It does not prevent the use of electricity because the greenhouse gas intensity is related to the thermal load rather than the energy consumption which is covered by B2P7(2).
5. For the purposes of B2P7(3), the *renewable energy* must be on-site (not GreenPower) and includes, but is not limited to, solar, wind, hydroelectric, wave action, and geothermal.

B2P8

Temperature

[2019: BP2.3]

A Heated water service must ensure that Heated water is provided at appropriate temperatures for the correct functioning of the fixture or appliance.

B2P9

Pressure

[2019: BP2.3]

A Heated water service must ensure that working pressures at outlets are—

- (a) not less than 50 kPa and not more than 500 kPa; and
- (b) where working pressures outside the range specified in (a) are required, working pressures must be suitable for the correct functioning of the fixture or appliance.

B2P10 **Uncontrolled discharge**

[2019: BP2.3]

A Heated water service must avoid failure or uncontrolled discharge.

B2P11 **Water efficiency**

[2019: BP2.3]

A heated water service must ensure the efficient use of drinking water by limiting water use from a shower, basin, kitchen sink or laundry trough to a flow rate of not more than 9 l/m.

Verification Methods

NSW B2V1

NT B2V1

QLD B2V1

VIC B2V1

B2V1 **Greenhouse gas intensity of a water heater**

[2019: BV2.1]

- (1) Compliance with B2P7(3) for a water heater in a *heated water* supply system is verified when the annual greenhouse gas intensity of the water heater does not exceed 100 g CO₂-e/MJ of thermal energy load determined in accordance with AS/NZS 4234.
- (2) The annual greenhouse gas intensity of the water heater in B2V1(1) is the sum of the *annual greenhouse gas emissions* from each energy source in g CO₂-e divided by the annual thermal energy load of the water heater.
- (3) The *annual greenhouse gas emissions* from each energy source in B2V1(2) is the product of the—
 - (a) annual amount of energy consumed from that energy source; and
 - (b) emission factor of—
 - (i) if the energy source is electricity, 253 g CO₂-e/MJ; or
 - (ii) if the energy source is liquefied petroleum gas, 65 g CO₂-e/MJ; or
 - (iii) if the energy source is natural gas, 61 g CO₂-e/MJ; or
 - (iv) if the energy source is wood or biomass, 4 g CO₂-e/MJ.

Explanatory Information:

In B2V1, the symbol “g CO₂-e/MJ” means “grams of Carbon Dioxide equivalent per megajoule/s”.

B2V2 **Heated water storage temperature**

[2019: BV2.2]

Compliance with B2P6 is verified for each *heated water* storage system when the water heater is designed such that all water is subjected to a temperature-dependent minimum exposure period as specified in Table B2V2 within 7 days before passing through the water-heating appliance’s *heated water* outlet.

Table B2V2: Heated water storage minimum exposure period

Temperature	Minimum exposure period
70°C or greater	1 second
66°C	2 minutes
60°C	32 minutes

Deemed-to-Satisfy Provisions

B2D1 Deemed-to-Satisfy Provisions

[2019: B2.1]

- (1) *Performance Requirement B2P1* is satisfied if *heated water* is supplied by—
 - (a) the *Network Utility Operator's drinking water* supply; or
 - (b) an alternative *drinking water* supply.
- (2) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements B2P2 to B2P11* are satisfied by complying with B2D2 to B2D11.
- (3) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.
- (4) Where it is proposed to use a warm water system, *Performance Requirement B2P6* must be complied with.

Notes:

There are no *Deemed-to-Satisfy Provisions* for warm water systems.

NSW B2D2

NT B2D2

QLD B2D2

SA B2D2

TAS B2D2

B2D2 Water heater in a heated water supply system

[2019: B2.2]

- (1) In a new Class 1 or Class 10 building—
 - (a) a water heater in a *heated water* supply system must be—
 - (i) a solar water heater complying with (2b); or
 - (ii) a heat pump water heater complying with (2b); or
 - (iii) a gas water heater complying with (3e); or
 - (iv) an electric resistance water heater only in the circumstances described in (4e); or
 - (v) a wood fired thermosiphon water heater or direct fired water heater each complying with AS/NZS 3500.4. and
- (2) In a new Class 1 or Class 10 building a solar water heater and a heat pump water heater must comply with either—
 - (a) Table B2D2a, for the minimum Small-Scale Technology Certificates for the installation zone; or
 - (b) Table B2D2b, for the minimum energy savings calculated in accordance with AS/NZS 4234.
- (3) In a new Class 1 or Class 10 building a gas water heater must be rated not less than 5 Stars in accordance with AS

4552.

- (4) In a new Class 1 or Class 10 building an electric resistance water heater with no storage or a *heated water* delivery of not more than 50 litres in accordance with AS 1056.1 may be installed when—
- (a) the building has—
 - (i) not more than 1 bedroom; and
 - (ii) not more than 1 electric resistance water heater installed; or
 - (b) the building has—
 - (i) a water heater that complies with (2) or (3); and
 - (ii) not more than 1 electric resistance water heater installed; or
 - (c) the greenhouse emission intensity of the public electricity supply is low.

Table B2D2a: Minimum Small Scale Technology Certificates

<u>Number of bedrooms in the building</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
<u>1 or 2</u>	<u>12</u>	<u>11</u>	<u>9</u>	<u>8</u>
<u>3 or 4</u>	<u>19</u>	<u>17</u>	<u>15</u>	<u>13</u>
<u>4 or more</u>	<u>25</u>	<u>22</u>	<u>19</u>	<u>16</u>

Table B2D2b: Minimum energy savings

<u>Number of bedrooms</u>	<u>Minimum energy saving</u>
<u>1 or 2</u>	<u>40% for a 'small load' system</u>
<u>2 or 3</u>	<u>60% for a 'medium load' system</u>
<u>4 or more</u>	<u>60% for a 'large load' system</u>

B2D3 Layout of taps

[2019: B2.3]

Where both a *heated water* tap and a cold water tap are installed, the *heated water* tap must be installed to the left of, or above, the cold water tap if—

- (a) each tap controls a separate outlet; or
- (b) both taps control a combined flow of water delivered through a single outlet.

Explanatory Information:

To reduce the likelihood of scalding in the bath, consideration should be given to installing tapware out of reach of the bath. This would reduce the likelihood of children accidentally turning the *heated water* on or adjusting the temperature.

To reduce the likelihood of scalding in the shower, consideration should be given to the following when installing *heated water* tapware in a shower:

- *Heated water* taps such as quarter turn tapware should be located in a manner that to be turned on requires the tap lever to be turned upwards, reducing the likelihood of accidentally turning the *heated water* on in the event of a slip or fall. Likewise, cold water taps should be located in a manner so that the lever operator is turned down to turn on the cold water.
- Mixer tapware, where the lever is lifted to start the flow of water, should be considered because if a slip or fall occurred, there is greater likelihood that the temperature would either be reduced or the tap turned off.
- The location of shower taps should be positioned at a height so that they cannot be operated by young children.

- Positioning the taps in a specific recess may reduce the likelihood of accidentally altering the water temperature in the event of a slip or fall and is considered a suitable recommendation for bathrooms provided specifically for the elderly or infirm.

B2D4 ~~Maximum flow rates for heated water outlets~~ Water efficiency

[2019: B2.4]

Tapware used for~~The outlet of~~ a shower, basin, kitchen sink, or laundry trough must be a minimum of 3 Star WELS rated and discharge~~have a maximum flow rate of not~~ more than 9 litres per minute.

Exemptions:

The requirements of B2D4 do not apply to a shower intended to provide rapid drenching of a person for emergency purposes, such as chemical removal.

Applications:

A *heated water* outlet includes an outlet which delivers any combination of *heated water* and cold water.

Explanatory Information:

1. AS 6400 Water Efficient Products - Rating and labelling, provides the basis for the rating and labelling of a range of products under the mandatory Water Efficiency Labelling and Standards (WELS) Scheme.
2. B2D4 Water efficiency outlines the minimum level of water efficiency for certain plumbing products and fixtures, however the adoption of products and technologies of greater efficiency should be considered.

NSW B2D5

QLD B2D5

TAS B2D5

B2D5 ~~Maximum delivery temperature~~

[2019: B2.5]

The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

- (a) not more than 45°C in any—
 - (i) residential part of an *aged care building*; or
 - (ii) *patient care area* in a *health-care building*; or
 - (iii) part of an *early childhood centre*, or primary or secondary school, that is used by children; or
 - (iv) designated *accessible* facility in a common area of a Class 2 building, or in any part of a Class 3, 5, 6, 7, 8, 9a, 9b, 9c or 10 building; or
- (b) not more than 50° C in all other cases.

Applications:

B2D5 only applies to new *heated water* installations for personal hygiene purposes.

Explanatory Information:

Consideration should be given to the intended occupants of a building when commissioning the *heated water* delivery temperature.

For example, if the occupants of a Class 1 building are older adults or young children, a lower temperature than specified in B2D5(b) should be considered.

NSW B2D6

QLD B2D6

TAS B2D6

B2D6 Temperature control devices

[2019: B2.6]

- (1) A temperature control device used to deliver *heated water* in accordance with B2D5(a) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap.
- (2) A temperature control device used to deliver *heated water* in accordance with B2D5(b) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or
 - (d) temperature limited water heater.
- (3) The *required* maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

Applications:

B2D6 only applies to new *heated water* installations.

B2D7 Heated water storage

[2019: B2.7]

Containers used for producing and/or storing *heated water* must be provided with temperature and pressure relief devices in accordance with [Section 5 of AS/NZS 3500.4](#).

B2D8 Legionella control

[2019: B2.8]

Legionella control for water heaters must be carried out in accordance with AS/NZS 3500.4.

B2D9 Design, construction and installation **General requirements**

[2019: B2.9]

NT B2D9(1)

SA B2D9(1)

VIC B2D9(1)

- (1) ~~The design, construction and installation, replacement, repair, alteration and maintenance of a~~ *heated water* service must be in accordance with AS/NZS 3500.4.
- (2) ~~A solar heated water supply system for food preparation and sanitary purposes, where installed in a new building in climate zones 1, 2 or 3, is not required to comply with Section 8 of AS/NZS 3500.4.~~

NT B2D9(3)

B2D10 Bushfire prone areas

[New for 2022]

A *heated water* service in designated bushfire prone areas must be in accordance with AS 3959.

B2D11 **Solar heated water**

[2019: B2.9]

A solar *heated water* supply system for food preparation and sanitary purposes, where installed in a new building in *climate zones 1, 2 or 3*, is not *required* to comply with Section 8 of AS/NZS 3500.4.

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to a *heated water* service. They include, but may not be limited to, those listed in Table B2.

Table B2: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Excavations for pipework adjacent to a building and footings	B1 Structural provisions	H1 Structure
Termite management for attachments to buildings and penetrations through a slab		
Penetrations for pipework through a vapour barrier		
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety
Fixtures and fittings in a wet area	F1 Damp and weatherproofing	H4 Health and amenity
Service pipework external to the building and penetrations through roof cladding in a bushfire prone area	G5 Construction in bushfire prone areas	H7 Ancillary provisions and additional construction requirements
Pipework sound insulation	F5 Sound transmission and insulation	H4 Health and amenity
<u>Flues, chimneys, pipes, gas storage, domestic fuel tanks, cooling or heating appliances or other services</u>	<u>C4 Protection of openings</u>	<u>H3 Fire safety</u>
Central heating pipework	J5 Air-conditioning and ventilation systems	H6 Energy efficiency
Pool and spa heating and pumping - energy efficiency	J7 Heated water supply swimming pool and spa pool plant	
Energy consumption monitoring for water heaters	J8 Facilities for energy monitoring	Not applicable

Part B3 Non-drinking water services

Introduction to this Part

This Part sets out the requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of~~ any part of a *non-drinking water* service of a property. It covers from the *point of connection* to the *points of discharge*~~points of discharge~~.

Objectives

B301 Objective

[2019: BO3]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss of amenity*) due to the failure of a *non-drinking water* installation; and
- (b) ensure that a *non-drinking water* installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a *non-drinking water* installation throughout its serviceable life will continue to satisfy the requirements of Objectives (a) to (e).

Functional Statements

B3F1 Non-drinking water supply

[2019: BF3.1]

Sanitary fixtures, sanitary appliances and supply outlets provided with *non-drinking water* must be adequate.

B3F2 Non-drinking water installations

[2019: BF3.2]

Non-drinking water must be supplied through *plumbing* installations in a way that avoids the likelihood of inadvertent contamination of any *drinking water* service, minimise any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

B3P1 Non-drinking wWater supply

[2019: BP3.1]

- (1) A *non-drinking water* service must only be connected to outlets clearly identified for non-drinking use.
- (2) A *non-drinking water* service must not have a *cross-connection* with a *drinking water* service.

B3P2 Identification

[2019: BP3.2]

Pipes, pipe outlets, fittings, storage and holding tanks that are part of a *non-drinking water* service must be clearly identified.

B3P3 Velocity ~~Design, construction and installation~~

[2019: BP3.3]

- (1) A *non-drinking water* service must ensure that pipework water velocity does not exceed 3m/s for more than 1% of the time that the water is required during the annual peak hour.~~the following:~~
- (a) ~~Non-drinking water is provided at required flow rates and pressures for the correct functioning of fixtures and appliances.~~
 - (b) ~~Access for maintenance of mechanical components and operational controls.~~
 - (c) ~~The system, appliances and devices can be isolated for testing and maintenance.~~
- (2) ~~A non-drinking water service must~~

Explanatory Information:

During the hour of heaviest usage in reticulated non-drinking services, a water velocity of 3 m/s must not be exceeded for 99% of the time that any downstream fixtures are in use.

B3P4 Access and isolation

[2019: BP3.3]

- (1) A non-drinking water service must ensure access for maintenance of mechanical components and operational controls.
- (2) A non-drinking water service must ensure the system, appliances and devices can be isolated for testing and maintenance.

B3P5 Pressure

[2019: BP3.3]

A non-drinking water service must ensure that working pressures at outlets are—

- (a) not less than 50 kPa or more than 500 kPa; or
- (b) where working pressures outside the range specified in (a) are required, working pressures must be suitable for the correct functioning of the fixture or appliance.

B3P6 Uncontrolled discharge

[2019: BP3.3]

A non-drinking water service must avoid uncontrolled discharge or failure.

Deemed-to-Satisfy Provisions

B3D1 Deemed-to-Satisfy Provisions

[2019: B3.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* B3P1 to B3P6 are satisfied by complying with B3D2 and B3D4
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

B3D2 Distribution of non-drinking water

[2019: B3.2]

A *non-drinking water* service must not be connected to any outlet that supplies water for—

- (a) human consumption; or
- (b) food preparation; or
- (c) food utensil washing; or
- (d) personal hygiene.

NSW B3D3

VIC B3D3

B3D3 Design, construction and installation ~~General requirements~~

[2019: B3.3]

~~The design, construction, installation, replacement, repair, alteration and maintenance of a~~ A *non-drinking water* service must be in accordance with Section 9 of AS/NZS 3500.1.

Explanatory Information:

~~The design, construction, installation, replacement, repair, alteration and maintenance of~~ Requirements for a *non-drinking water* service used for fire-fighting purposes are contained in Part B4 ~~must be in accordance with Part B4.~~

B3D4 Bushfire prone areas

[New for 2022]

A non-drinking water service in designated bushfire prone areas must be in accordance with AS 3959.

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to *non-drinking water* services. These include, but may not be limited to, those listed in Table B3.

Table B3: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Excavations for pipework adjacent to a building and footings	B1 Structural provisions	H1 Structure
Termite management for attachments to buildings and penetrations through a slab		
Penetrations for pipework through a		

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
vapour barrier		
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety
Fixtures and fittings in a wet area	F1 Damp and weatherproofing	H4 Health and amenity
<u>Flues, chimneys, pipes, gas storage, domestic fuel tanks, cooling or heating appliances or other services</u>	<u>C4 Protection of openings</u>	<u>H3 Fire safety</u>
Service pipework external to the building and penetrations through roof cladding in a bushfire prone area	G5 Construction in bushfire prone areas	H7 Ancillary provisions and additional construction requirements
Pipework sound insulation	F5 Sound transmission and insulation	H4 Health and amenity

DRAFT

Part B4 Fire-fighting water services

NSW Part B4

NT Part B4

QLD Part B4

Introduction to this Part

This Part sets out requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of~~ any part of a fire-fighting water service from the *point of connection* or other acceptable source(s) of supply to the fire-fighting equipment, including hydrant, hose reel, sprinkler services and wall drencher systems.

Objectives

B4O1 Objective

[2019: BO4]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to the failure of a fire-fighting water installation; and
- (b) ensure that a fire-fighting water installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a fire-fighting water installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (e).

Functional Statements

B4F1 Fire-fighting water supply

[2019: BF4]

Fire-fighting equipment must be provided with adequate water for its intended purpose.

Performance Requirements

B4P1 Flow rate and pressure ~~Design, construction and installation~~

[2019: BP4.1]

- (4) A fire-fighting water service must ensure that the following: Water is provided at required flow rates and pressures for the correct functioning of the fire-fighting equipment. ~~water supply flow and pressures to is provided at required flow rates and pressures for the correct functioning of the fire-fighting equipment are to be based on a minimum 95th percentile system performance for the correct functioning of the fire-fighting equipment.~~
- (a) ~~Access for maintenance of mechanical components and operational controls.~~
 - (b) ~~The system can be isolated for testing and maintenance.~~

~~(2) A fire-fighting water service must avoid uncontrolled discharge or failure.~~

B4P2 **Access and isolation**

[2019: BP4.1]

(1) A fire-fighting water service must ensure access for maintenance of mechanical components and operational controls.

(2) A fire-fighting water service must ensure the system can be isolated for testing and maintenance.

B4P3 **Fire-fighting water storage**

[2019: BP4.1]

Water storage supplying fire-fighting systems must be sized suitably for the level of risk and supply arrangements.

B4P4 **Uncontrolled discharge**

[2019: BP4.1]

A fire-fighting water service must avoid uncontrolled discharge or failure.

Deemed-to-Satisfy Provisions

B4D1 **Deemed-to-Satisfy Provisions**

[2019: B4.1]

(1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement B4P1 to B4P4* is satisfied by complying with *B4D2 to B4D6*.

(1) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

B4D2 **General requirements**

[2019: B4.2]

(4) Fire-fighting water services for Class 2 to Class 9 buildings and structures must comply with the requirements of Part E1 ~~of~~ Volume One of the NCC.

~~VIC B4D2(2)~~

~~(2) The installation of a fire fighting water service must be in accordance with—~~

~~(a) AS/NZS 3500.1; and~~

~~(b) where applicable—~~

~~(i) FPAA101H; or~~

~~(ii) FPAA101D.~~

VIC B4D2(3)

Explanatory Information:

NCC Volume One requires the installation of fire-fighting equipment including fire hose reels, fire hydrants and automatic fire suppression systems in certain types of buildings.

The installation of fire-fighting water services in Class 1 buildings is not required by NCC Volume Two, however where these services are installed voluntarily, they must be in accordance with this part.

B4D3 Fire sprinkler systems

[New for 2022]

- (1) Automatic fire sprinkler systems must be in accordance with—
- (a) AS 2118.1 for general systems; or
 - (b) AS 2118.4 for accommodation buildings not exceeding four stories; or
 - (c) AS 2118.5 for home fire sprinkler systems.
- (2) Automatic fire sprinkler systems for combined sprinkler and hydrant systems in multi-story buildings must be in accordance with—
- (a) AS 2118.1 for general systems; or
 - (b) AS 2118.6 for multi-story buildings; or
 - (c) FPA101H for buildings which are less than 25m in effective height and contain Class 2 and 3 parts.

Explanatory Information:

For residential fire sprinklers to FPA101D Automatic Fire Sprinkler System Design - Drinking water supply, see Part B1 Cold water services.

B4D4 Fire hydrants

[New for 2022]

Fire hydrants must be in accordance with AS 2419.1.

B4D5 Fire hose reels

[New for 2022]

Fire hose reels must be in accordance with AS 2441.

B4D6 Bushfire prone areas

[New for 2022]

Fire-fighting water services in designated bushfire prone areas must be in accordance with AS 3959.

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to fire-fighting water services. These include, but may not be limited to, those listed in Table B4.

Table B4: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Excavations for pipework adjacent to a building and footings	B1 Structural provisions	H1 Structure
Termite management for attachments to buildings and penetrations through a slab		
Penetrations for pipework through a vapour barrier		

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety
Fixtures and fittings in a wet area	F1 Damp and weatherproofing	H4 Health and amenity
Service pipework external to the building and penetrations through roof cladding in a bushfire prone area	G5 Construction in bushfire prone areas	H7 Ancillary provisions and additional construction requirements
<u>Flues, chimneys, pipes, gas storage, domestic fuel tanks, cooling or heating appliances or other services</u>	<u>C4 Protection of openings</u>	<u>H3 Fire safety</u>
Pipework sound insulation	F5 Sound transmission and insulation	H4 Health and amenity

DRAFT

Part B5 Cross-connection control

Introduction to this Part

This Part sets out *cross-connection* hazards and corresponding *Hazard Ratings*.

Objectives

B501 Objective

[2019: BO5]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss of amenity*) due to contamination of a *drinking water* supply; and
- (b) ensure that a water service installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a water service installation throughout its serviceable life will continue to satisfy the requirements of Objectives (a) to (e).

Functional Statements

B5F1 Design and installation

[2019: BF5]

Water services must be designed and installed so as to operate in a way that avoids the likelihood of contamination of any part of the *drinking water* supply, and minimises any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

B5P1 Contamination control

[2019: BP5.1]

Water services must be designed, constructed and installed to avoid contamination.

Applications:

B5P1 applies to cold water, *heated water*, *non-drinking water*, *rainwater* and fire-fighting water services.

Verification Methods

B5V1 **Determination of individual and zone hazard ratings**

[New for 2022]

- (1) Compliance with Performance Requirement B5P1 for individual and zone protection is verified by compliance with B5V1.
- (2) A hazard exists wherever it is possible for water or contaminants to enter a non-drinking water service or supply via any potential cross-connection between itself and another separate non-drinking water service on the same site.
- (3) Each hazard must be—
 - (a) assigned a Hazard Rating in accordance with B5V1(4); and
 - (b) isolated from the drinking water service by an appropriate backflow prevention device which is selected and installed for the appropriate Hazard Rating in accordance with Section 4 of AS/NZS 3500.1.
- (4) To determine the Hazard Rating—
 - (a) an assessment of the property or proposed installation must be undertaken using Tables B5V1a to B5V1e; and
 - (b) the scores allocated from each table are calculated; and
 - (c) the Hazard Rating is determined by the sum of the scores in accordance with B5V1(5).
- (5) A total score of—
 - (a) 0 to 3 presents No Hazard; and
 - (b) 4 to 7 presents a Low Hazard; and
 - (c) 8 to 10 presents a Medium Hazard; and
 - (d) 11 or greater presents a High Hazard.

Exemptions:

Where site access is restricted in a way that could limit or prevent future testing or maintenance of a backflow prevention device, the site must be protected with a device suitable for a High Hazard.

Explanatory Information:

1. The intent of this Verification Method is to provide a consistent means of determining Hazard Ratings for situations not listed in Specification 41.
2. This Verification Method is not intended to enable the lowering of any Hazard Ratings already prescribed in Specification 41.

Table B5V1a: Building class

<u>Site condition</u>	<u>Common examples</u>	<u>Notes</u>	<u>Score</u>
<u>The property to which the water service is installed contains a Class 1, 2, 7a, or 10 building where not more than 12 people reside.</u>	<u>Domestic residences and carparks with no associated activities.</u>	<u>Building may use small amounts of cleaning products etc.</u>	<u>1</u>
<u>The property to which the water service is installed contains a Class 3, 4, 5, 6 or 7b building where chemical products are not stored.</u>	<u>Hostel, hotel and multi-level office.</u>	<u>Building is likely to have greater than 12 residents and / or occupants, and may contain moderate amounts of cleaning or commercial chemicals.</u>	<u>2</u>
<u>The property to which the water service is installed contains a Class 7b, 8 or 9 building where chemical products are stored.</u>	<u>Mechanical workshop, metal finisher, cleaning product wholesaler.</u>	<u>May contain large amounts of hazardous or toxic commercial chemicals.</u>	<u>3</u>

Table B5V1b: On-site water services

Site condition	Common examples	Notes	Score
There is only a drinking water supply and no other water sources to the property.	Drinking water source may be a rainwater tank to a detached dwelling.	Residential rainwater tanks are considered drinking water.	0
There is one drinking water supply and potentially other non-drinking water supply or separate fire water service available to the property. (not applicable if the non-drinking water supply is Network Utility Operator provided recycled water with a sewerage source).	Water utility drinking water supply and a separate fire water service.	Network Utility Operator supplied recycled water with a sewerage source is assessed separately due to greater health risks.	3
Commercial agriculture, farming, turf irrigation, industrial, processing or chemical industries. The property is supplied with drinking water and non-drinking water from multiple sources with potential for health related contamination.	Property has a Network Utility Operator drinking water source and a waste water effluent irrigation system, process water or bore water source.	Increased potential for cross-connection between drinking and non-drinking water with high consequences such as chemicals, recycled sewerage, medical or biological contaminants.	5

Table B5V1c: Drinking water use

Site condition	Common examples	Notes	Score
Drinking water use will not involve commercial use of hazardous or toxic substances and the site is unsuitable for their use and unlikely to change.	Domestic residences, offices and restaurants.	Minor use of cleaning and other chemicals is permitted. Professional or commercial hazardous chemical use is not permitted.	1
Drinking water will be used with commercial use hazardous substances, but not Schedule 1 to 4 or Schedule 6 to 8 poisons. Drinking water may be used with commercial use hazardous substances without major modification.	Butchers, hairdressers	Hazardous substances and scheduled poisons have applicable warning labels. Cleaning of floors and benches with chlorine solution puts butchers into this category.	2
Drinking water use may involve large scale food or beverage processing, human or animal biological or faecal matter. Schedule 1 to 4 and Schedule 6 to 8 poisons and have potential for health related contamination where the installation is suitable for these uses without major modification. Also included are areas likely to undergo frequent changes of use or where the future use is unknown.	Chemical packaging facilities, hospital facilities, pan washing apparatus, fertiliser injection systems, chemical dispensers (high toxicity), food preparation fixtures with clean in place systems, industrial shed complexes and light commercial properties.	Wash down of spills puts chemicals packaging / storage into this category even if liquid batching and storage is not practised. Also applies where there is no certainty about the type of activities to be practiced and the materials used.	3

Table B5V1d: Cross-connection type

<u>Site condition</u>	<u>Common examples</u>	<u>Notes</u>	<u>Score</u>
The product or installation presents no possibility of cross-connection to food, drink or water or other liquid vessels other than those used for domestic purposes.	<u>Residential units and offices.</u>	There are no water storage tanks, pools, spas or commercial kitchens on site or able to be installed.	0
The product or installation presents a potential for a cross-connection between a drinking water service and a commercial food, drink or water or other liquid vessel, or any vessel intended for low hazard chemicals.	<u>Small scale food processing facilities.</u>	Potential backflow from low volume of non-hazardous substances. Non-hazardous chemicals are any substances not required to display a hazardous substance label.	1
The product or installation presents a potential for a cross-connection between a drinking water service and a non-drinking water service.	<u>Drinking water outlets within close proximity to a Network Utility Operator drinking water supply, bore or irrigation system or a rainwater tank.</u>	Potential connection of a drinking water system and a system with low hazard water.	2
The product or installation presents a potential for cross-connection between the drinking water service and a swimming pool, water storage tank used for non-domestic purposes, large scale food and drink processing operations, a vessel, pipe or body of liquid containing a hazardous substance or Schedule 5 poison, recycled water service with human or biological matter or faecal contamination.	<u>Building header tanks, commercial swimming pool make up water connections, soft drink manufacturers.</u>	Potential connection of a drinking water system and a system containing an hazardous substance or low toxicity poison or large quantities of food or drink product. Hazardous chemicals are any substances required to display a hazardous substance label.	3
The product or installation presents the potential for cross-connection between the drinking water service and a bulk water service vessel containing a hazardous substance or Schedule 5 poison.	<u>Chemical make-up water connected to a chemical batching process.</u>	Any potential connection to a system containing large volumes of hazardous material or moderately poisonous material.	4
The product or installation has potential for a cross-connection to a sewerage source, a trade waste source, a vessel with human or animal biological or faecal matter, a vessel pipe or body of liquid containing any quantity of a Schedule 1 to 4 or Schedule 6 to 8 poison.	<u>Recycled water irrigation system with drinking water back up supply.</u>	Applies to potential connections with a high health risk.	5

Table B5V1e: Extent of contamination

Site condition	Common examples	Notes	Score
The product or installation presents a cross-connection that will only affect 1 small property (fewer than 10 people).	Domestic residences	Small site where a cross-connection will affect the drinking water to fewer than 10 people.	1
The product or installation presents a cross-connection that will affect a moderate size property or multiple small sites within the same property	Cafes or small restaurants on a single title property.	Cross-connection will potentially affect drinking water to fewer than 100 people.	2
The product or installation presents a cross-connection that will affect a large property or could allow contaminant to enter other properties.	Tenancies within a shopping complex, connected via water meters without containment protection.	Cross-connection will affect drinking water to 100 people or greater. Consideration is needed as to whether water meters may not have suitable backflow protection or may not be adequate to mitigate the risk.	3

Deemed-to-Satisfy Provisions

B5D1 Deemed-to-Satisfy Provisions

[2019: B5.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement B5P1* is satisfied by complying with B5D2 to B5D5.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

B5D2 Drinking water service

[2019: B5.2]

- (1) A hazard exists wherever it is possible for water or *contaminants* to enter a *drinking water* service or supply via any potential *cross-connection* between—~~the drinking water service and any of the following:~~
 - (a) ~~the Non-drinking water service; and-~~
 - (b) ~~any of the following: Rainwater harvesting system.~~
 - (i) ~~A non-drinking water service; or~~
 - (ii) ~~A rainwater service; or-~~
 - (iii) ~~An alternative water supply; or~~
 - (iv) ~~A swimming pool; or-~~
 - (v) ~~Pipes, fixtures Alternative water supply. Swimming pool. Pipes, fixtures or equipment (including boilers and pumps) containing chemicals, liquids, gases or other substances which may be harmful to health or safety.~~
- (2) Each hazard must—
 - (a) be assigned an individual *Hazard Rating* or zone *Hazard Rating* in accordance with S41C4 and S41C5 ~~of zone Hazard Rating in accordance with Clauses 3 a~~ of Specification 41; and
 - (b) be isolated from the *drinking water* service by an appropriate *backflow prevention device* which is selected and installed in accordance with Section 4 of AS/NZS 3500.1.
- (3) Where a *site* is served by a *Network Utility Operator's drinking water* supply, appropriate *containment protection* must be selected and installed in accordance with Section 4 of AS/NZS 3500.1.

Explanatory Information:

~~Performance Requirement B3P1(2) covers cross-connection of a non-drinking water service with a drinking water service.~~

B5D3 Non-drinking water service

[2019: B5.3]

- (1) A hazard exists wherever it is possible for water or ~~C~~*contaminants* to enter a *non-drinking water* service or supply via any potential *cross-connection* between itself and another separate *non-drinking water* service on the same *site*.
- (2) Each hazard must—
 - (a) be assigned a containment *Hazard Rating* in accordance with ~~S41C6~~*Clause of Specification 44*; and
 - (b) be isolated from the *non-drinking water* service by appropriate *containment protection* which is selected and installed in accordance with Section 4 of AS/NZS 3500.1.

Explanatory Information:

A 'separate *non-drinking water* service' means one which draws water from a different source. For example, on a site connected to both recycled water and bore water, both are *non-drinking water* services, but are drawn from different sources. Therefore, each would be a 'separate *non-drinking water* service'.

B5D4 Fire-fighting water service

[2019: B5.4]

Each fire-fighting water service must—

- (a) be assigned a *Hazard Rating* in accordance with ~~S41C7 of Specification 44~~; and
- (b) be isolated from the *drinking water* service by an appropriate *backflow prevention device* which is selected and installed in accordance with Section 4 of AS/NZS 3500.1.

B5D5 Unprotected water service

[New for 2022]

Water downstream of a *backflow prevention device* is considered to be an *unprotected water service*.

NSW B5D6

Part B6 Rainwater ~~services~~ harvesting and use

Introduction to this Part

This Part sets out the requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of any part of a rainwater harvesting system~~ any part of a *rainwater service* from the *point of connection* to the *rainwater storage*, to the *rainwater points of discharge*.

This Part applies to a *rainwater service* used for non-drinking purposes, where a cold water service is provided for drinking and personal hygiene from a *Network Utility Operator* supply.

This Part does not apply to rainwater used only for irrigation purposes.

Where water provided by a *Network Utility Operator* is not available or not utilised as the primary water source for drinking and personal hygiene, rainwater is considered to be *drinking water* supplied by an alternative water source. Where this occurs, this service is considered to be a cold water service and must comply with Part B1 of NCC Volume Three.

Objectives

B6O1 Objective

[2019: BO6]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to the failure of a *rainwater service* ~~or *harvesting system*~~; and
- (b) conserve water; and
- (c) safeguard the environment; and
- (d) safeguard public and private infrastructure; and
- (e) ensure that a *rainwater service* ~~*harvesting system*~~ installation throughout its serviceable life will continue to satisfy the requirements of Objectives (a) to (d).

Functional Statements

B6F1 Rainwater ~~service~~ harvesting system

[2019: BF6]

A *rainwater service* ~~*harvesting system*~~ must be designed and installed so as to operate in a way that avoids the likelihood of inadvertent contamination of any *drinking water* service, and minimises any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

B6P1 ~~Pressure~~ Stored rainwater

[2019: BP6.2]

A *rainwater service* must ensure that static working pressures at outlets are—~~*harvesting system* must be designed, constructed and installed in such a manner as to reduce the likelihood of stored rainwater becoming contaminated or otherwise posing a hazard to public health.~~

- (a) not less than 50 kPa and not more than 500 kPa; or

- (b) suitable for the correct functioning of the fixture or appliance where pressures outside of (a) are required.

Applications:

~~B6P1 only applies to a rainwater harvesting system that serves a—~~

- (a) ~~cold water service; or~~
- (b) ~~Heated water service; or~~
- (c) ~~non-drinking water service.~~

Limitations:

~~B6P1 does not apply to a rainwater harvesting system that—~~

- (a) ~~only supplies water for fire fighting or irrigation; or~~
- (b) ~~collects rainwater from any area other than a roof catchment area; or~~
- (c) ~~only supplies a non-drinking water service.~~

B6P2

VelocityRainwater harvesting system installation

[2019: BP6.2]

A rainwater service must ensure pipework water velocity does not exceed 3 m/s for more than 1% of the time that the water is required during the normal peak flow. ~~rainwater harvesting system must be designed, constructed and installed in such a manner as to—~~

- (a) ~~avoid the likelihood of contamination of water within the rainwater harvesting system, the water service, or the Network Utility Operator's drinking water supply (if connected); and~~
- (b) ~~provide water to fixtures and appliances at flow rates and pressures which are required for the correct functioning of those fixtures and appliances under normal conditions; and~~
- (c) ~~avoid the likelihood of failure and uncontrolled discharge; and~~
- (d) ~~facilitate the efficient use of drinking water; and~~
- (e) ~~allow access, as required, for maintenance of mechanical components and operational controls; and~~
- (f) ~~allow the system, appliances and backflow prevention devices to be isolated for testing and maintenance, where required.~~

Explanatory Information:

During the hour of heaviest usage in reticulated rainwater services, a velocity of 3m/s must not be exceeded for 99% of the time that any downstream fixture is in use.

Applications:

~~B6P2 only applies to a rainwater harvesting system that serves a—~~

- (a) ~~cold water service; or~~
- (b) ~~heated water service; or~~
- (c) ~~non-drinking water service.~~

Limitations:

~~B6P2 does not apply to a rainwater harvesting system that—~~

- (a) ~~only supplies water for fire fighting or irrigation; or~~
- (b) ~~collects rainwater from any area other than a roof catchment area; or~~
- (c) ~~only supplies a non-drinking water service.~~

B6P3 Water efficiency**Rainwater service**

[2019: BP6.23]

A ~~rainwater service~~**rainwater service** must ensure the efficient use of water by ~~must not have an unprotected cross-connection with any Network Utility Operator's drinking water service or with any non-drinking water service.~~

- (a) ~~limiting water usage to—~~
 - (i) ~~a cistern or flushing valve and must not discharge more than 2.5 litres to a single urinal stall or 600mm length of a continuous urinal wall; and~~
 - (ii) ~~a dual flush cistern or flushing valve that is connected to a water closet pan and discharge a flush volume of—~~
 - (A) ~~6 and 3 litres; or~~
 - (B) ~~4.5 and 3 litres; and~~
 - (iii) ~~an efficient level of other rainwater using fixtures and appliances.~~
- (b) ~~other water saving measures which achieve equivalent or greater efficiency than (a).~~

Exemptions:

~~The requirements of B6P3(a)(ii) do not apply to a vacuum water closet pan.~~

Applications:

~~The flush volumes of B6P3 may be within a tolerance of—~~

- (1) ~~±0.5 litres for the full flush of a 6/3 litre cistern; or~~
- (2) ~~+0.5 litres for the reduced flush of a 6/3 litre cistern; or~~
- (3) ~~±0.2 litres for a 4.5/3 litre cistern.~~

Applications:

~~B6P3 only applies to a rainwater harvesting system that serves a—~~

- (a) ~~cold water service; or~~
- (b) ~~heated water service; or~~
- (c) ~~non-drinking water service.~~

Limitations:

~~B6P3 does not apply to a rainwater harvesting system that —~~

- (a) ~~only supplies water for fire fighting or irrigation; or~~
- (b) ~~collects rainwater from any area other than a roof catchment area; or~~
- (c) ~~only supplies a non-drinking water service.~~

B6P4 Access and isolation**Identification**

[2019: BP6.3]

- (a) ~~A rainwater service must allow for cleaning and maintenance. Pipes, pipe outlets, storage and holding tanks that form part of a rainwater harvesting system must be clearly identified.~~
- (b) ~~A rainwater service must allow for the system to be isolated. Pipes, pipe outlets, storage and holding tanks that form part of a rainwater harvesting system must be clearly identified.~~

Applications:

~~B6P4 only applies to a rainwater harvesting system that serves a—~~

- ~~(a) cold water service; or~~
- ~~(b) heated water service; or~~
- ~~(c) non-drinking water service.~~

Limitations:

- ~~(1) B6P4 does not apply to a rainwater harvesting system that—~~
 - ~~(a) only supplies water for fire fighting or irrigation; or~~
 - ~~(b) collects rainwater from any area other than a roof catchment area; or~~
 - ~~(c) only supplies a non-drinking water service.~~
- ~~(2) B6P4 does not apply if the rainwater harvesting system is the only water supply connected to the site.~~

B6P5

Identification

[2019: BP6.4]

Pipes and pipe outlets that form part of a rainwater service must be clearly identified.

B6P6

Uncontrolled discharge

[2019: BP6.2]

A rainwater service must avoid the likelihood of failure and uncontrolled discharge.

Deemed-to-Satisfy Provisions

B6D1

Deemed-to-Satisfy Provisions

[2019: B6.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* B6P1 to B6P6 are satisfied by complying with B6D2 to B6D6.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

B6D2

Design, construction and installation ~~Application of Part~~

[2019: B6.5 ~~Intro to Part~~]

- ~~(4) A rainwater service must comply with AS/NZS 3500.1. The Deemed-to-Satisfy Provisions of this Part only applies to a rainwater harvesting system that serves a—~~
 - ~~(a) cold water service; or~~
 - ~~(b) heated water service; or~~
 - ~~(c) non-drinking water service.~~
- ~~(2) The Deemed-to-Satisfy Provisions of this Part do not apply to a rainwater harvesting system that—~~
 - ~~(a) only supplies water for fire fighting or irrigation; or~~
 - ~~(b) collects rainwater from any area other than a roof catchment area; or~~
 - ~~(c) only supplies a non-drinking water service.~~

- (3) ~~The Deemed to Satisfy Provisions of this Part do not apply to a rainwater harvesting system that is the only water supply connected to the site.~~

TAS B6D2(3)

B6D3 Identification ~~Collection of rainwater~~

[2019: B6.5]

Identification of rainwater pipework and outlets must be in accordance with AS/NZS 3500.1. ~~A rainwater harvesting system must only collect roof water.~~

B6D4 Water efficiency ~~Top-up lines~~

[New for 2022]

- (1) Cisterns or flushing devices for water closet pans must— ~~Any top-up line from a Network Utility Operator's drinking water supply to a rainwater tank must comply with Part B1.~~
- (a) be a minimum of 3 Star WELS rating, discharging no more than 6 litres or 4.5 litres for a full flush; and
 - (b) have a dual flushing mechanism.
- (2) Cisterns or flushing devices for urinals must—
- (a) be a minimum of 2 Stars WELS rating, discharging no more than 2.5 litres; and
 - (b) serve a single stall or 600mm length of continuous urinal wall; and
 - (c) not be automatic or set-cycle.

Applications:

The flush volumes of B6D4 for a—

- (a) 6.3 litre cistern may be within a tolerance of—
 - (i) ±0.5 litres for the full flush; or
 - (ii) +0.5 litres for the reduced flush.
- (b) 4.5 litre cistern may be within a tolerance of ±0.2 litres.

Exemptions:

- (1) The requirements of B6D4 do not apply to vacuum drainage systems.
- (2) The requirements of B6D4(2)(c) do not apply to a programmed solenoid operated flushing system if programmed to shut down during extended periods of non-occupancy of a building.

Explanatory Information:

- 1. Prior to installing a programmed solenoid operated flushing system, further advice should be sought from the authority having jurisdiction.
- 2. Where sensor control is used for urinal flushing, sensors should be located to avoid unnecessary 'nuisance' flushing triggered by pedestrian traffic.
- 3. AS 6400 Water Efficient Products - Rating and Labelling, provides the basis for the rating and labelling of a range of products under the mandatory Water Efficiency Labelling and Standards (WELS) scheme.
- 4. B6D4 Water efficiency outlines the minimum level of water efficiency for certain plumbing products and fixtures, however the adoption of greater efficiency products and technologies should be considered.

B6D5 **Access and isolation~~Buried and partially buried tanks~~**

[New for 2022]

- (1) Access for maintenance of mechanical components and operational controls must be provided in accordance with AS/NZS 3500.1. ~~For the purposes of Section 16 of AS/NZS 3500.1, the following applies:~~
- (a) ~~A rainwater tank that is set into and completely covered by earth is a 'buried tank'.~~
 - (b) ~~A rainwater tank that is not in any way set into the ground is an 'above ground tank'.~~
 - (c) ~~A rainwater tank not matching the description at (a) or (b) is a 'partially buried tank'.~~
 - (d) ~~In determining the appropriate description applicable under this clause, access openings, inlets and outlets to a tank may be ignored.~~
- (2) Isolation of appliances and backflow prevention devices for testing and maintenance must be provided in accordance with AS/NZS 3500.1.

NSW B6D5(2)

B6D6 **Rainwater pipework and outlets**

[2019: B6.5]

- (1) ~~Rainwater pipework and outlets must comply with Section 16 of AS/NZS 3500.1.~~
- (2) ~~Identification of rainwater pipework and outlets in accordance with clause 16.3.2 of AS/NZS 3500.1 is not *required* if the rainwater harvesting system is the only water supply available on the site.~~

Part B7 Rainwater Storage

Introduction to this Part

This Part sets out the requirements for *rainwater storage* and applies from the point of rainwater entry to the *rainwater storage* to the point of connection to the cold or *rainwater service* (as applicable).

This Part applies to both the storage of water intended for drinking and personal hygiene use as an alternative water source supplying ~~drinking water to a cold water service~~; and ~~Rainwater provided for non-drinking purposes where water for drinking and personal hygiene is provided by the *Network Utility Operator*.~~

~~This Part applies from the point of rainwater entry to the *rainwater storage* to the point of connection to the cold or *rainwater service* (as applicable).~~

This Part does not apply to rainwater stored for the purposes of fire-fighting water services or irrigation systems.

State, Territory or Local Governments may in some areas require the mandatory installation of rainwater tanks. Consultation with the relevant Authority having jurisdiction is recommended.

Objectives

B7O1 Objective

[2019: B06]

The objective of this part is to—

- (a) safeguard people from illness, injury or loss (including loss of amenity) due to the failure of a rainwater storage; and
- (b) conserve water; and
- (c) safeguard the environment; and
- (d) safeguard public and private infrastructure; and
- (e) ensure that the *rainwater storage* throughout its serviceable life will continue to satisfy the requirements of Objectives (a) to (d).

Functional Statements

B7F1 Rainwater storage

[2019: BF6]

Rainwater storage systems must be designed and installed so as to operate in a way that avoids the likelihood of inadvertent contamination of any *drinking water service*, and minimises any adverse impact on building occupants, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

B7P1 Contamination control

[2019: BP6.1]

Rainwater storage must reduce the likelihood of stored rainwater becoming contaminated or otherwise posing a hazard to public health.

B7P2 **Uncontrolled discharge**

[2019: BP6.2]

Rainwater storage must avoid the likelihood of failure and uncontrolled discharge.

B7P3 **Access and isolation**

[2019: BP6.2]

- (1) *Rainwater storage must allow access for cleaning and maintenance.*
- (2) *Rainwater storage must allow for the system to be isolated.*

B7P4 **Identification**

[2019: BP6.4]

Rainwater storage and holding tanks used only for non-drinking purposes must be clearly identified.

Exemptions:

Where rainwater storage is intended to supply water for drinking and personal hygiene, identification of the storage and holding tanks is not required.

Deemed-to-Satisfy Provisions

B7D1 **Deemed-to-Satisfy Provisions**

[2019: B6.1]

- (1) *Where a Deemed-to-Satisfy Solution is proposed, Performance Requirements B7P1 to B7P4 are satisfied by complying with B7D2 to B7D6.*
- (2) *Where a Performance Solution is proposed, the relevant Performance Requirements must be determined in accordance with A2G2(3) and A2G4(3) as applicable.*

B7D2 **Design, construction and installation**

[New for 2022]

Rainwater storage must comply with AS/NZS 3500.1.

B7D3 **Collection of rainwater**

[2019: B6.2]

Rainwater storage must only collect roof water.

B7D4 **Access and isolation**

[New for 2022]

Access and isolation must be provided in accordance with AS/NZS 3500.1.

B7D5 **Identification**

[2019: B6.5]

Rainwater storage must identify the contents in accordance with AS/NZS 3500.1.

B7D6 **Top-up lines**

[2019: B6.3]

Any cold water service from a Network Utility Operator's drinking water supply to a rainwater storage system top-up or switching device must comply with Part B1.

DRAFT

Specification 41 Cross-connection hazards

S41C1 Scope

[2019: BS5.1.1]

This Specification sets out *cross-connection* hazards and corresponding *Hazard Ratings*.

Explanatory Information:

This Specification only prescribes *Hazard Ratings* for a limited list of known hazards. It does not cover every potential *cross-connection* that may arise from time to time.

Where a situation arises which is not listed in this Specification, the appropriate *Hazard Rating* may be determined as a *Performance Solution* or by using *Verification Method B5V1*.

S41C2 Application

[2019: BS5.1.2]

- (4) The *Hazard Ratings* prescribed in this Specification must be used for selecting the required *backflow prevention device*, for the purposes of compliance with the *Deemed-to-Satisfy Provisions*.
- (2) ~~A reference in this Specification to a Type A, B, C or D irrigation system is a reference to such a system as described in Section 7 of AS/NZS 3500.1.~~
- (3) ~~Fire fighting water services must be rated in accordance with S41C7.~~

Explanatory Information:

~~The Deemed to Satisfy Provisions referred to in this clause include any relevant Deemed to Satisfy Provisions set out in Parts B1, B2, B3, B4 and B6.~~

S41C3 Protection types and ~~h~~Hazard ~~r~~Ratings

[2019: BS5.1.3]

- (1) Cross-connection hazards within the site must be rated in accordance with either—
 - (a) S41C4 for individual protection at the point of each individual hazard; or
 - (b) S41C5 for zone protection at the point where a group of hazards can be isolated. S41C5, for zone protection at the point where a group of hazards can be isolated.
- (2) The hazard posed by the *site* to the *Network Utility Operator's drinking water* supply must be rated for *containment protection*, ~~at the point of connection~~ in accordance with S41C6.
- (3) Pipework and outlets supplied by a drinking water source downstream of a backflow prevention device are considered to convey unprotected drinking water.

Explanatory Information:

~~In some jurisdictions, regulations issued under water supply legislation and/or rules set by a Network Utility Operator may prescribe containment protection which differs from this Specification.~~

~~If this occurs then those regulations and/or rules should be followed in place of this Specification. This Specification only applies for the purposes of compliance with NCC Volume Three. It is not intended to limit or extend the application of other regulations.~~

S41C4 Individual protection

[2019: BS5.1.4]

- (1) The following are *Low Hazard* for the purpose of *individual protection*:
- (a) Carbonated drink dispensing machines.
 - (b) Drinking fountains and bottle fillers.
 - (c) Coils and jackets in heat exchangers, in sealed and non-toxic environments only.
 - (d) ~~Dental consoles.~~
 - (e) Drink dispensing equipment including vending machines and coffee machines.
 - (f) ~~Drinking water in reclaimed water plants.~~
 - (g) External hose taps, with no hazards within 18m.-
 - (h) Fixtures used for ablutions including baths, ~~bidettes,~~ basins, ~~and showers~~ and bidettes with a minimum 25mm air gap.
 - (i) Fixtures used for food preparation, including sinks.
 - (j) Flexible connections over domestic fixtures.
 - (k) Haemodialysis machines in Class 1, 2 and 10 buildings. ~~Food preparation or food storage tanks, vats or vessels (without clean-in-place systems).~~
 - (l) ~~Haemodialysis machines.~~ Hair salon basins or troughs.
 - (m) ~~Hose taps located within —~~
 - (i) ~~18 m of a Type C irrigation system; or~~
 - (ii) ~~an area provided with zone protection.~~
 - (n) In-line water softeners and filters.
 - (o) Photographic processing machines without developer mixing. ~~Laundry troughs.~~
 - (p) ~~Photographic developers — water supplying rinse tanks.~~
 - (q) Emergency eye wash and shower stations for use with drinking water. ~~Steam boilers.~~
 - (r) Buried rainwater tank, partially buried rainwater tank or above ground rainwater tanks in Class 1, 2, 7b or 10 buildings. ~~Steam boilers.~~
 - (s) Food preparation or food storage tanks, vats or vessels (without clean-in-place systems).
- (2) The following are *Medium Hazard* for the purpose of *individual protection*:
- (a) Chemical dispensers (low toxicity).
 - (b) Dental consoles. ~~Chlorinators. Coils and jackets in heat exchangers, in unsealed and toxic environments. Steam calorifiers.~~
- (3) The following are *High Hazard* for the purpose of *individual protection*:
- (a) Chlorinators. ~~Antibiotic injectors (agricultural).~~
 - (b) Coils and jackets in heat exchangers, in unsealed and toxic environments.
 - (c) Steam calorifiers.
 - (d) Steam boilers. ~~Antibiotic injectors (agricultural).~~
 - (e) Antibiotic injectors (agricultural).
 - (f) Bidets and douche seats without the 25mm air gap hoses.
 - (g) Handheld bidet hoses and trigger sprays.
 - (h) Chemical dispensers (high toxicity).
 - (i) Cooling towers.
 - (j) Demineralising equipment using ion-exchange resins with acid and alkali regeneration.
 - (k) Equipment used for handling, mixing, measuring and processing chemical and microbiological substances.

- (l) Fogging and cleaning sprays with chemical injection or additives.
- (m) ~~Food preparation or food storage tanks, vats or vessels (with clean in place systems).~~ Mixing of chemicals.
- (n) Pan washing apparatus.
- (o) Photographic developers with drinking water supply rinse tanks or mixing facilities.
- (p) Plants with auxiliary *non-drinking water* supplies.
- (q) ~~Portable and mobile tankers.~~ Type D irrigation system injected with fertilisers, herbicides, nematicides, insecticides or weedicides.
- (r) Weed and pest spraying and water cartage tanks.
- (s) Portable and mobile tankers.
- (t) Placenta / surgical waste disposal units.
- (u) Buried rainwater tanks, partially buried rainwater tanks or above ground rainwater tanks in Class 3, 4, 5, 6, 7b or 9 buildings.

Explanatory Information:

Dual check valves with atmospheric ports are the recommended backflow prevention device for individual protection of rainwater tanks outlined in S41C4(1)(n) as they provide a visual indication of failure.

Explanatory Information: Clean-in-place systems

For the purposes of (1)(oj) in individual protection, a clean-in-place is a method of cleaning the internal surfaces of pipes, vessels, process equipment, filters and associated fittings, without disassembly. system allows for internal chemical cleaning to occur without the need to disassemble.

S41C5 Zone protection

[2019: BS5.1.5]

- (1) The following are *Low Hazard* for the purpose of *zone protection*:
 - (a) ~~Dental and medical surgeries.~~ Fire-fighting water storage tanks without chemical additives.
 - (b) Food storage tanks, vats or vessels.
 - (c) Hair salon basins or troughs. ~~Photographic laboratories.~~
 - (d) Type B *irrigation systems*.
 - (e) Water filtration equipment.
- (2) The following are *Medium Hazard* for the purpose of *zone protection*: ~~Aircraft facilities. Secondary school laboratories, including fume cupboards.~~
 - (a) Type C *irrigation systems*.
 - (b) Beauty spas and foot salons.
- (3) The following are *High Hazard* for the purpose of *zone protection*:
 - (a) Photographic laboratories.
 - (b) Aircraft facilities.
 - (c) Secondary school laboratories, including fume cupboards.
 - (d) Dental and medical procedure rooms and equipment using drinking water.
 - (e) Clean-in-place systems.
 - (f) Commercial laundries.
 - (g) Cooling or heating systems with recirculating water.
 - (h) Dockside facilities.
 - (i) Drinking nipples and troughs (agricultural).

- (j) Food preparation or food storage tanks, vats or vessels.
- (k) Vats and vessels (clean-in-place systems).
- (l) In a Class 9e building—
 - (i) dissecting rooms; and
 - (ii) utility rooms which contain fixtures other than hand basins; and
 - (iii) operating theatres.
- (m) Industrial and teaching laboratories ~~(except as referred to in (2)(b)).~~
- (n) Industrial process water that has been recirculated.
- (o) Mortuary equipment used in funeral parlours, mortuaries and autopsy areas.
- (p) Sanitary dump points.
- (q) Tanks, vats or vessels associated with electroplating, degreasing, descaling, stripping, pickling, dipping or the like.
- (r) Type D *irrigation systems* injected with fertilisers, herbicides, nematicides, insecticides or weedicides.

S41C6 Containment protection

[2019: BS5.1.6]

- (1) The following are *Low Hazard* for the purpose of *containment protection*:
 - (a) A water service provided to a Class 1, 2, 7a or 10a building where—s.
 - (i) not more than 12 persons reside; and
 - (ii) the building may only use small amounts of cleaning products.
 - (b) A water service where there are no non-drinking water services within the property.
 - (c) ~~Premises served by a rainwater harvesting system, not including any rainwater storage tanks that are buried tanks.~~
 - (d) ~~Premises served by a Network Utility Operator's recycled water supply.~~
- (2) The following are *Medium Hazard* for the purpose of *containment protection*:
 - (a) A water service provided to a Class 3, 4, 5, 6 or 7b building where chemicals are not stored. ~~Caravan parks.~~
 - (b) A water service provided to a property that has— ~~Caravan parks.~~
 - (i) other non-drinking water services; or
 - (ii) a separate fire water service.
 - (c) ~~Food and beverage processing plants.~~
 - (d) ~~Marinas.~~
 - (e) ~~Premises that are also connected to a —~~
 - (i) ~~grey water re-use system; or~~
 - (ii) ~~reticulated and disinfected reclaimed water system.~~
 - (f) ~~Public swimming pool.~~
- (3) The following are *High Hazard* for the purpose of *containment protection*:
 - (a) A water service provided to a Class 7b, 8 or 9 building. ~~battoirs.~~
 - (b) A water service provided to a property used for commercial agriculture, farming, turf irrigation, industrial, processing or chemical industries. ~~battoirs. battoirs.~~
 - (c) A water service provided to a property that has non-drinking water services from multiple sources with potential for health related contamination. ~~battoirs. battoirs.~~
 - (d) ~~Car and plant washing facilities.~~
 - (e) ~~Chemical laboratories.~~
 - (f) ~~Chemical plants.~~

- (g) ~~Factories using, processing or manufacturing toxic chemicals.~~
- (h) ~~Hospitals, mortuaries, clinics and the like.~~
- (i) ~~Metal finishing plants.~~
- (j) ~~Pathology laboratories.~~
- (k) ~~Petroleum processing plants or storage plants.~~
- (l) ~~Piers, docks and other waterfront facilities.~~
- (m) ~~Premises where access to conduct inspections is restricted.~~
- (n) ~~Premises with an alternative water supply, except as referred to in (1)(b) or (2)(d) or (3)(f).~~
- (o) ~~Sanitary depots.~~
- (p) ~~Sewage treatment plants and sewage lift stations.~~
- (q) ~~Universities.~~

Applications:

- (a) Medium Hazard properties for the purpose of containment protection include the following—
 - (i) Caravan parks.
 - (ii) Food and beverage processing plants.
 - (iii) Marinas.
 - (iv) Premises that are connected to a grey water re-use system or a reticulated and disinfected reclaimed water system.
 - (v) Public swimming pools.
- (b) High Hazard properties for the purpose of containment protection include the following—
 - (i) Abattoirs.
 - (ii) Car and plant washing facilities.
 - (iii) Chemical laboratories.
 - (iv) Chemical plants.
 - (v) Factories using, processing or manufacturing toxic chemicals.
 - (vi) Hospitals, mortuaries, clinics and the like.
 - (vii) Metal finishing plants.
 - (viii) Pathology laboratories.
 - (ix) Petroleum processing and storage plants and facilities.
 - (x) Piers, docks and other waterfront facilities.
 - (xi) Premises where access to conduct inspections is restricted.
 - (xii) Sanitary depots.
 - (xiii) Sewerage treatment plants and sewerage lift stations.
 - (xiv) Universities.

Exemptions:

- (1) Clause (1)(b), non-drinking water service provided to the property by a Network Utility Operator as part of a dual water supply.
- (2) Clause (2)(b)(i), a non-drinking water supply is provided to the property by a Network Utility Operator.

Explanatory Information:

- 1. Clause (2)(a), building classes 3, 4, 5, 6, and 7b are likely to have greater than 12 occupants (residents and/or workers) and may contain moderate amounts of cleaning or commercial chemicals, or a separate fire-fighting service.

2. Clause (3)(b) and (3)(c), a property presents a risk from wastewater effluent irrigation system, process water and/or bore water. The property has an increased potential for cross-connection between drinking water and non-drinking water with high consequences such as chemicals, recycled sewerage, medical, biological, toxic or hazardous substances.

S41C7 Fire-fighting water services

[2019: BS5.1.7]

- (1) The following fire-fighting water services are Low Hazard—~~Fire-fighting water services with—~~
- (a) a fire-fighting water service which has—~~direct connection to a Network Utility Operator's water supply; and~~
 - (i) a direct connection to a Network Utility Operator's water supply; and
 - (ii) no tank, reservoir, connection to another water supply, antifreeze or other additives, or auxiliary water supply within 180 m of a fire brigade booster connection.
 - (b) domestic fire sprinkler systems installed in Class 1 buildings.~~no tank, reservoir, connection to another water supply, antifreeze or other additives, or auxiliary water supply within 180 m of a fire brigade booster connection;~~
 - (c) FPAA101D fire sprinkler systems; and
 - (d) fire-fighting water storage tanks.~~no tank, reservoir, connection to another water supply, antifreeze or other additives, or auxiliary water supply within 180 m of a fire brigade booster connection, are Low Hazard.~~
- (2) Any~~Fire-fighting water services not referred to in (1) are Medium Hazard.~~ hose reels located within an area where a cross-connection hazard exists have a High Hazard that is the same as the areas within reach of the hose.
- (3) ~~Any fire-fighting water services not referred to in (1) are Medium Hazard.~~

Notes:

Fire hose reels located within an area where a cross-connection hazard exists have a Hazard Rating the same as the areas within reach of the hose.

Exemptions:

~~The following are deemed Low Hazard:~~

- (a) ~~Domestic (Class 1) fire sprinkler systems.~~
- (b) ~~FPAA101D fire sprinkler systems.~~
- (c) ~~Fire-fighting water storage tanks.~~

Section C Sanitary plumbing and drainage systems

Part C1

Sanitary plumbing systems

Objectives

C101 Objective

Functional Statements

C1F1 Disposal system

Performance Requirements

C1P1 Disposal ~~Design, construction and installation~~

C1P2 Access

C1P3 Water efficiency

C1P4 Uncontrolled discharge

C1P5 Ventilation

C1P6 Contamination

C1P7 Damage

Verification Methods

C1V1 Determination of sanitary plumbing wastewater flowrates

C1V2 System 1 - Common discharge design

C1V3 System 2 - Common discharge design

C1V4 System 3 - Branch design

C1V5 Stack design

Deemed-to-Satisfy Provisions

C1D1 Deemed-to-Satisfy Provisions

C1D2 Invert levels

C1D3 Design, construction and installation ~~General requirements~~

C1D4 Bushfire prone areas

C1D5 Water efficiency

Part C2

Sanitary drainage systems

Objectives

C201 Objective

Functional Statements

C2F1 Disposal system

C2F2 Swimming pool waste water disposal

Performance Requirements

C2P1 Disposal ~~design, construction and installation~~

C2P2 Swimming pool drainage

C2P4 Access

C2P5 Ventilation

C2P6 Contamination

Public Comment Draft Sanitary plumbing and drainage systems

[C2P7](#) [Uncontrolled discharge](#)

[C2P8](#) [Damage](#)

Verification Methods

[C2V1](#) [Velocity and liquid-to-air ratio](#)

[C2V2](#) [Pressure testing](#)

[C2V3](#) [Determination of sanitary drainage wastewater flowrates](#)

Deemed-to-Satisfy Provisions

[C2D1](#) [Deemed-to-Satisfy Provisions](#)

[C2D2](#) [Invert levels](#)

[C2D3](#) [Swimming pool drainage](#)

[C2D4](#) [Design, construction and installation](#) ~~General requirements~~

[C2D5](#) [Bushfire prone areas](#)

Part **C3**

On-site wastewater management

Objectives

[C3O1](#) [Objective](#)

Functional Statements

[C3F1](#) [On-site wastewater management](#)

Performance Requirements

[C3P1](#) [Health impacts](#)

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Part C1 Sanitary plumbing systems

Introduction to this Part

This Part sets out the requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of~~ any part of a sanitary *plumbing* system of a property including from sanitary fixtures and appliances to the point of connection to a sanitary drainage system.

Objectives

C101 Objective

[2019: CO1]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to the failure of a sanitary *plumbing* installation; and
- (b) ensure that a sanitary installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a sanitary installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (e).

Functional Statements

C1F1 Disposal system

[2019: CF1]

Sanitary fixtures and sanitary appliances must be provided with an adequate disposal system that does not impact adversely on the occupants of the premises, property, the environment or the *Network Utility Operator's* infrastructure.

Performance Requirements

C1P1 Disposal ~~Design, construction and installation~~

[2019: CP1.1]

- (1) A sanitary *plumbing* system must ensure ~~the following:~~ Sewage or sullage is transferred to a sanitary *drainage* system or an *approved disposal system*.
- (a) ~~Access for maintenance of mechanical components,~~
 - (b) ~~Operational controls for clearing blockages,~~
 - (c) ~~Ventilation, to avoid hydraulic load imbalance is provided,~~
 - (d) ~~Effective and efficient water use.~~
- (2) ~~A sanitary plumbing system must avoid the following:~~
- (a) ~~Blockage or uncontrolled discharge.~~

- (b) ~~Entry of water, sewage, sullage, foul air and gases from the system into buildings.~~
- (c) ~~Damage from superimposed loads, ground movement or root penetration.~~
- (d) ~~Entry of surface water, subsurface water and stormwater into the system.~~

Explanatory Information: Non-flushing (waterless) urinals

Where a non-flushing (waterless) urinal is to be installed to a sanitary *plumbing* system comprising copper, copper alloy or other metallic piping, undiluted discharge transported through such pipework may increase the likelihood of corrosion.

Practitioners should also be aware that undiluted discharge, transported through pipework of any material, can cause a build-up of struvite (ammonium magnesium phosphate) inside the pipework, potentially causing *blockage* within the sanitary *plumbing* system.

C1P2 Access

[New for 2022]

A sanitary plumbing system must ensure access for maintenance of mechanical components, operational controls and for clearing blockages.

C1P3 Water efficiency

[2019: CP1.1]

A sanitary plumbing system must ensure efficient use of drinking water by—

- (a) limiting water usage from—
 - (i) a shower, basin, kitchen sink or laundry trough to a flow rate of not more than 9 litres per minute; and
 - (ii) a cistern or flushing valve to a flush volume of no more than 2.5 litres for each—
 - (A) single urinal stall; or
 - (B) 600mm length of a continuous urinal wall; and
 - (iii) a dual flush cistern or flushing valve that is connected to a water closet with a flush volume of—
 - (A) 6 and 3 litres; or
 - (B) 4.5 and 3 litres; or
- (b) water saving measures equivalent to or greater than those described in (a).

Applications:

The flush volume of C1P3 may be within a tolerance of:

- (a) ±0.5 litres for the full flush of a 6/3 litre cistern.
- (b) +0.5 litres for the reduced flush of a 6/3 litre cistern.
- (c) ±0.2 litres for a 4.5/3 litre cistern.

Explanatory Information:

The requirements of C1P3 do not apply to a vacuum water closet pan.

C1P4 Uncontrolled discharge

[2019: CP1.1]

A sanitary plumbing system must avoid *uncontrolled discharge*.

C1P5 Ventilation

[2019: CP1.1]

A sanitary *plumbing* system must ensure that ventilation is provided to avoid hydraulic load imbalance such that—

- (a) there is less than a 1% likelihood during the annual peak hour that when any fixture discharges, air pressure at any trap seal exceeds ± 375 Pa difference from atmospheric pressure; or
- (b) an equivalent level of safety to human health is achieved as a system complying to (a).

C1P6 Contamination

[2019: CP1.1]

A sanitary plumbing system must avoid the following—

- (a) entry of water, sewerage and sillage from the system into buildings.
- (b) entry of foul gases from the system into buildings, such that—
 - (i) at pressures of up to ± 375 Pa, water trap seals will not be reduced to depths less than 70mm for trap seals in pressurised rooms and 25mm for all other applications; or
 - (ii) an equivalent level of safety to human health is achieved as a system complying to (i); and
- (c) entry of surface water, subsurface water and stormwater into the system.

C1P7 Damage

[2019: CP1.1]

A sanitary plumbing system must avoid damage from superimposed loads, ground movement or root penetration.

Verification Methods

C1V1 Determination of sanitary plumbing wastewater flowrates

[New for 2022]

- (1) Compliance with C1P3 for pipe sizing is verified for each sanitary *plumbing* pipework section when the discharge flowrate is not less than—
 - (a) the probable simultaneous wastewater flowrate calculated in accordance with (2); or
 - (b) the Discharge Unit (DU) value of the highest fixture connected upstream of the pipework section as given in Table C1V1b, in litres per second, whichever is greater.
- (2) For the purposes of (1)(a), for each pipework section, the design probable simultaneous wastewater flowrate must be calculated in accordance with the following:

$$Q_{Total} = K\sqrt{\sum DU + Q_{Other}}$$

- (3) In the equation shown at (2)—
 - (a) Q_{Total} = the probable simultaneous wastewater flowrate for that pipework section (l/s); and
 - (b) Q_{Other} = the sum of any other wastewater flowrates such as pumped discharges (l/s); and
 - (c) K = the frequency factor given in Table C1V1a (dimensionless); and
 - (d) $\sum DU$ = the sum of the discharge units as given in Table C1V1b, connected upstream of that pipework section (dimensionless).

Table C1V1a: Frequency factors

Fixture usage	NCC building classes	Frequency factor (K)
Intermittent use e.g. dwelling, guesthouse or office	1, 2, 3 or 4	0.5
Frequent use e.g. hospital, school, restaurant or hotel	5, 6, 7, 8, 9a or 9c	0.7
Congested use e.g. open to general public	9b	1.0
Special use e.g. laboratory	Not applicable	1.2

Table C1V1b: Discharge units

Fixture	System 1	System 2	System 3
Basin	0.5	0.3	0.3
Shower	0.6	0.4	0.4
Urinal	0.8	0.5	0.4
Bath	0.8	0.6	1.3
Kitchen sink	0.8	0.6	1.3
Water closet	2.0	1.8	1.2
Washing machine - up to 6 kg	0.8	0.6	0.6
Domestic dishwasher	0.8	0.6	0.2

Explanatory Information:

System types referred to in Table C1V1b are as follows:

- System 1 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 50%.
- System 2 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 70%.
- System 3 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 100%.
- Systems 1 and 2 are similar to the fully vented modified system and System 3 is similar to the single stack system detailed in AS/NZS 3500.2.
- Filling degree is defined as the ratio between the height of fluid in a pipe (h) and the diameter of the pipe (D), or h/D.

C1V2 System 1 - Common discharge design

[New for 2022]

- (1) Compliance with C1P5 for pipe sizing is verified for each common discharge branch when—
 - (a) pipework is in accordance with (2); and
 - (b) ventilation is in accordance with (3).
- (2) Each unvented common discharge pipe within the system must have—
 - (a) a pipe length from trap weir to stack less than 4.0 m; and
 - (b) no more than three 90° bends, excluding the first bend after the trap outlet; and
 - (c) no vertical drops of greater than 45° inclination between the trap weir and the stack greater than 1.0 meter; and
 - (d) a gradient greater than 1.00%; and
 - (e) a pipe size in accordance with Table C1V2.

- (3) Each vented common discharge pipe within the system must have—
- (a) a pipe length from trap weir to the stack of less than 10.0 metres; and
 - (b) no vertical drops of greater than 45° inclination, between the trap weir and the stack greater than 3.0 metres; and
 - (c) a gradient greater than 0.50%; and
 - (d) a pipe size in accordance with Table C1V2; and
 - (e) a group vent sized in accordance with Table C1V2.
 - (f) each group vent either—
 - (i) terminates to atmosphere or interconnects with another vent in accordance with AS/NZS 3500.2; or
 - (ii) terminates at an air admittance valve with a minimum airflow rate equal to the wastewater design flowrate.

Table C1V2: Common discharge pipe capacity

<u>Common discharge pipe size - Nominal diameter (DN)</u>	<u>Unvented capacity Q_{Total} - Litres per second (l/s)</u>	<u>Vented capacity Q_{Total} - Litres per second (l/s)</u>	<u>Group vent - Nominal diameter (DN)</u>
<u>40</u>	<u>0.50</u>	<u>N/A</u>	<u>N/A</u>
<u>50</u>	<u>0.80</u>	<u>0.75</u>	<u>40</u>
<u>65</u>	<u>1.00</u>	<u>1.50</u>	<u>40</u>
<u>80</u>	<u>2.00</u>	<u>3.00</u>	<u>50</u>
<u>100</u>	<u>2.50</u>	<u>3.75</u>	<u>65</u>

Limitations:

Water closets must only be connected to a DN 80 or DN 100 discharge pipe.

C1V3 System 2 - Common discharge design

[New for 2022]

- (1) Compliance with C1P5 relating to pipe sizing is verified for each common discharge branch when—
- (a) pipework is in accordance with (2); and
 - (b) ventilation is provided in accordance with (3).
- (2) Each unvented common discharge pipe within the system must have—
- (a) a pipe length from trap weir to stack less than 10.0 metres; and
 - (b) no more than one 90° bend, excluding the first bend after the trap outlet; and
 - (c) no vertical drops of greater than 45° inclination between the trap weir and the stack, greater than—
 - (i) 1.0 metre, where a water closet is connected to the branch; or
 - (ii) 3.0 metres, where no water closets are connected to the branch; and
 - (d) a gradient greater than 1.50%; and
 - (e) a pipe size in accordance with Table C1V3.
- (3) Each vented common discharge pipe within the system has—
- (a) no vertical drops of greater than 45° inclination between the trap weir and the stack greater than 3.0 metres; and
 - (b) a gradient greater than 1.50%; and
 - (c) a pipe size in accordance with Table C1V3; and
 - (d) a group vent sized in accordance with Table C1V3; and

- (e) Each group vent either terminates to—
- (i) atmosphere or interconnects with another vent in accordance with AS/NZS 3500.2; or
 - (ii) an air admittance valve with a minimum airflow rate equal to 2 times the wastewater design flowrate.

Table C1V3: System 2 - Common discharge pipe capacity

<u>Common discharge pipe - Nominal diameter (DN)</u>	<u>Unvented capacity Q_{Total} - Litre per second (l/s)</u>	<u>Vented capacity Q_{Total} - Litres per second (l/s)</u>	<u>Group vent - Nominal diameter (DN)</u>
<u>40</u>	<u>0.50</u>	<u>0.75</u>	<u>32</u>
<u>50</u>	<u>1.00</u>	<u>1.50</u>	<u>32</u>
<u>65</u>	<u>1.50</u>	<u>2.25</u>	<u>40</u>
<u>80</u>	<u>2.25</u>	<u>3.40</u>	<u>40</u>
<u>100</u>	<u>2.50</u>	<u>3.75</u>	<u>50</u>

Limitations:

- (1) Water closets must only be connected to a DN 80 or DN 100 discharge pipe.
- (2) No more than one water closet can be connected to a DN 80 discharge pipe.

C1V4 System 3 - Branch design

[New for 2022]

- (1) Compliance with C1P5 relating to pipe sizing is verified for each discharge branch when—
 - (a) each unvented fixture, or combination of fixtures, connects independently to the stack in accordance with Table C1V4a; and
 - (b) each vented fixture, or combination of fixtures, connects to the stack in accordance with Table C1V4b.
- (2) Ventilation requirements must be in accordance with the following—
 - (a) each trap vent must be—
 - (i) not less than DN 50, where the connection of the vent to the branch is liable to *blockage* due to splashing or submergence; or
 - (ii) DN 32, where the connection of the vent to the branch is not liable to *blockage* due to splashing or submergence.
 - (a) each trap vent connects within 750 mm of the fixture it serves; and
 - (b) each trap vent must—
 - (i) terminate at atmosphere or interconnects with another vent in accordance with AS/NZS 3500.2; or
 - (ii) connects to a common trap vent at least 40 mm in diameter; or
 - (iii) connects to the stack above the flood level of the highest fixture; or
 - (iv) terminates to an air admittance valve with a minimum airflow rate equal to 2 times the wastewater design flowrate.
- (3) Each branch connection to the stack over 80mm, connecting to a stack of equal diameter uses a sweep or 45° junction.

Table C1V4a: System 3 - Unvented fixture connections

Fixture	Waste Nominal Diameter (DN)	Maximum length, in metres (m)	Minimum gradient (%)	Maximum gradient (%)	Maximum number of bends	Maximum vertical drop, in metres (m)
Basin	32	1.7	2.2	2.2	0	0
Basin	32	1.1	4.4	4.4	0	0
Basin	32	0.7	8.7	8.7	0	0
Basin	40	3.0	1.8	4.4	2	0
Basin group ≤4 basins	50	4	1.8	4.4	0	0
Bidet	32	1.7	2.2	2.2	0	0
Bidet	32	1.1	4.4	4.4	0	0
Bidet	32	0.7	8.7	8.7	0	0
Bidet	40	3.0	1.8	4.4	2	0
Shower	40	No limit	1.8	9	No limit	1.5
Bath	40	No limit	1.8	9	No limit	1.5
Single urinal	40	3	1.8	9	No limit	1.5
Slab urinal	65	3	1.8	9	No limit	1.5
Sink - kitchen	40	No limit	1.8	9	No limit	1.5
Trough - laundry	40	3	1.8	9	No limit	1.5
Domestic dishwasher	40	3	1.8	4.4	No limit	1.5
Domestic clothes washing machine - up to 6 kg	40	3	1.8	4.4	No limit	1.5
Water closet	80	No limit	1.8	No limit	No limit	1.5
Water closet	100	No limit	1.8	No limit	No limit	1.5
Water closet group ≤8 water closets	100	15	0.9	9	2	1.5
Food waste disposal unit	40	3.0	13.5	No limit	No limit	1.5
Sanitary napkin disposal unit	40	3.0	5.4	No limit	No limit	1.5
Floor waste gully	50	No limit	1.8	No limit	No limit	1.5
Floor waste gully	80	No limit	1.8	No limit	No limit	1.5
Floor waste gully	100	No limit	1.8	No limit	No limit	1.5

Table C1V4b: System 3 - Vented fixture connections

Fixture	Waste Nominal Diameter (DN)	Maximum length, in metres (m)	Minimum gradient (%)	Maximum gradient (%)	Maximum number of bends	Maximum vertical drop, in metres (m)
Basin	32	3.0	1.8	No limit	2	3.0
Basin	40	3.0	1.8	No limit	No limit	3.0
Basin group ≤5 basins	50	7.0	1.8	4.4	No limit	TBA
Basin group ≤10 basins	50	10.0	1.8	4.4	No limit	No limit
Bidet	32	3.0	1.8	No limit	2	3.0
Bidet	40	3.0	1.8	No limit	No limit	3.0
Shower	40	No limit	1.8	No limit	No limit	No limit
Bath	40	No limit	1.8	No limit	No limit	No limit
Single urinal	40	3.0	1.8	No limit	No limit	3.0
>1 Single urinal	50	No limit	1.8	No limit	No limit	No limit
Trough urinal	TBA	TBA	TBA	TBA	TBA	TBA
Slab urinal	65	3.0	1.8	No limit	No limit	3.0
Sink - Kitchen	40	No limit	1.8	No limit	No limit	No limit
Trough - Laundry	TBA	TBA	TBA	TBA	TBA	TBA
Domestic dishwasher	40	No limit	1.8	No limit	No limit	No limit
Domestic clothes washing machine (up to 6 kg)	40	No limit	1.8	No limit	No limit	No limit
Water closet	80	No limit	1.8	No limit	No limit	No limit
Water closet	100	No limit	1.8	No limit	No limit	No limit
Water closet group ≤8	100	15.0	0.9	No limit	No limit	No limit
Food waste disposal unit	40	3.0	13.5	No limit	No limit	3.0
Sanitary napkin disposal unit	40	3.0	5.4	No limit	No limit	3.0
Floor waste gully	50	No limit	1.8	No limit	No limit	No limit
Floor waste gully	80	No limit	1.8	No limit	No limit	No limit
Floor waste gully	100	No limit	1.8	No limit	No limit	No limit
Small potato peeler	40	3.0	13.5	No limit	No limit	3.0

Limitations:

(1) The maximum number of bends permitted is measured from the fixture trap weir to the connection to the stack.

excluding the first bend after the trap weir.

- (2) The maximum pipe length is measured from the fixture trap weir to the connection to the stack.
- (3) A slab urinal must not cater for more than 7 people. Additional waste outlets may be required for longer urinals.
- (4) Where a water closet is connected, sweep or 45° junctions must be used to connect to the stack.
- (5) Bottle and resealing traps are not permitted for food waste disposal units or sanitary napkin disposal units.

C1V5 **Stack design**

[New for 2022]

- (1) Compliance with C1P5 relating to pipe sizing is verified for the stack system when—
 - (a) each stack has a pipe size in accordance with (2); and
 - (b) ventilation is provided in accordance with (3).
- (2) Each stack must have a pipe size in accordance with—
 - (a) Table C1V5a, where a separate relief vent is not provided; or
 - (b) Table C1V5b, where a separate relief vent is provided.
- (3) Ventilation must comply with the following—
 - (a) each stack vent must terminate either to—
 - (i) the atmosphere or interconnects with another vent in accordance with AS/NZS 3500.2; or
 - (ii) an air admittance valve with a minimum airflow rate equal to 8 times the wastewater design flowrate; and
 - (b) each stack vent must be sized in accordance with—
 - (i) Clause 8.5.4 of AS/NZS 3500.2 for stack vents; or
 - (ii) Clause 8.5.3 of AS/NZS 3500.2 for relief vents; and
 - (c) each relief vent must interconnect with the stack vent at each floor.

Table C1V5a: Stack capacity without a relief vent

<u>Stack Nominal Diameter (DN)</u>	<u>Capacity with square or 88° junction, in litres per second (l/s)</u>	<u>Capacity with sweep or 45° junction, in litres per second (l/s)</u>
<u>65</u>	<u>0.5</u>	<u>0.7</u>
<u>80</u>	<u>2.0</u>	<u>2.5</u>
<u>100</u>	<u>4.0</u>	<u>5.2</u>
<u>150</u>	<u>9.5</u>	<u>12.4</u>

Table C1V5b: Stack capacity with a relief vent

<u>Stack Nominal Diameter (DN)</u>	<u>Capacity with square or 88° junction, in litres per second (l/s)</u>	<u>Capacity with sweep or 45° junction, in litres per second (l/s)</u>
<u>65</u>	<u>0.7</u>	<u>0.9</u>
<u>80</u>	<u>2.6</u>	<u>3.4</u>
<u>100</u>	<u>5.6</u>	<u>7.3</u>
<u>150</u>	<u>12.4</u>	<u>18.3</u>

Applications:

- (1) Water closets must be connected to a DN 80 or DN100 discharge pipe.
- (2) Water closets must not be connected to DN 80 where System 1 or System 3 is used.

Deemed-to-Satisfy Provisions

C1D1 Deemed-to-Satisfy Provisions

[2019: C1.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement C1P1 to C1P7* is satisfied by complying with C1D2 and C1D5.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

C1D2 Invert levels

[2019: C1.2]

The invert level of a trap or gully weir must be a minimum of 10 mm higher than the soffit of the pipe to which it connects.

SA C1D3

VIC C1D3

C1D3 Design, construction and installation ~~General requirements~~

[2019: C1.3]

~~The design, construction, installation, replacement, repair, alteration and maintenance of a~~ A sanitary *plumbing* system must be in accordance with AS/NZS 3500.2.

C1D4 Bushfire prone areas

[New for 2020]

A sanitary *plumbing* system in a designated bushfire prone area must be in accordance with AS 3959.

C1D5 Water efficiency

[New for 2022]

A sanitary *plumbing* system must ensure the efficient use of *drinking water* by—

- (a) limiting water usage from—
 - (i) a shower, basin, kitchen sink or laundry trough to a flow rate of not more than 9 l/m; and
 - (ii) a cistern or flushing valve to a flush volume of no more than 2.5 litres for each—
 - (A) single urinal stall; or
 - (B) 600mm length of a continuous urinal wall; and
 - (i) a dual flush cistern or flushing valve that is connected to a water closet with a flush volume of—
 - (A) 6 and 3 litres; or
 - (B) 4.5 and 3 litres; or
- (b) water saving measures equivalent to or greater than those described in (a).

Exemptions:

The requirements of C1D5 do not apply to a vacuum water closet pan.

Applications:

The flush volumes of C1D5 may be within a tolerance of—

- (1) ±0.5 litres for the full flush of a 6/3 litre cistern.
- (2) +0.5 litres for the reduced flush of a 6/3 litre cistern.
- (3) ±0.2 litres for a 4.5/3 litre cistern.

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to sanitary *plumbing* services. These include, but are not limited to, those listed in Table C1.

Table C1: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Termite management for attachments to buildings and penetrations through a slab	B1 Structural provisions	H1 Structure
Penetrations for pipework through a vapour barrier		
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety
Fixtures and fittings in a wet area	F1 Damp and weatherproofing	H4 Health and amenity
Service pipework external to the building and penetrations through roof cladding in a bushfire prone area	G5 Construction in bushfire prone areas	H7 Ancillary provisions and additional construction requirements
<u>Flues, chimneys, pipes, gas storage, domestic fuel tanks, cooling or heating appliances or other services</u>	C4 Protection of openings	<u>H3 Fire safety</u>
Pipework sound insulation	F5 Sound transmission and insulation	H4 Health and amenity

Part C2 Sanitary drainage systems

Introduction to this Part

This Part sets out the requirements for ~~the design, construction, installation, replacement, repair, alteration and maintenance of~~ any part of a sanitary *drainage* system of a property including from sanitary fixtures, ~~and~~ appliances and sanitary plumbing systems to the point of connection to an *approved disposal system*.

Objectives

C201 Objective

[2019: CO2]

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss of amenity*) due to the failure of a sanitary *drainage* installation; and
- (b) ensure that a sanitary *drainage* installation is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) safeguard people from illness caused by the discharge of *swimming pool* waste water; and
- (g) protect *other property* from damage caused by the discharge of *swimming pool* waste water; and
- (h) ensure that a sanitary *drainage* installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (g).

Functional Statements

C2F1 Disposal system

[2019: CF2.1]

Sanitary fixtures and sanitary appliances must be provided with an adequate disposal system that does not impact adversely on occupants of the premises, property, the environment or the *Network Utility Operator's* infrastructure.

NT C2F2

C2F2 Swimming pool waste water disposal

[2019: CF2.2]

Adequate means for the disposal of *swimming pool* waste water and *drainage* is to be provided to each *swimming pool*.

Performance Requirements

C2P1 Disposal ~~design, construction and installation~~

[2019: CP2.1]

(4) A sanitary *drainage* system must ensure ~~the following:~~ Sewage is transferred from a sanitary *plumbing* system to an

approved disposal system.

- (a) ~~Access for maintenance and clearing blockages.~~
 - (b) ~~Ventilation to avoid foul air and gases accumulating in the sanitary drainage and sewerage system.~~
 - (c) ~~Protection against internal contamination.~~
- (2) ~~A sanitary drainage system must avoid the following:~~
- (a) ~~Blockage and uncontrolled discharge.~~
 - (b) ~~Damage from root penetration, superimposed loads or ground movement.~~
 - (c) ~~Entry of water, foul air and gases from the system into buildings.~~
 - (d) ~~Entry of surface water, sub-surface water and stormwater into the system.~~
 - (e) ~~Damage to existing buildings or site works.~~
 - (f) ~~Damage to the Network Utility Operator's sewerage system or other approved disposal system.~~

NT C2P2

C2P2 Swimming pool drainage

[2019: CP2.2]

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

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

TAS C2P3

VIC C2P3

TAS C2P3

C2P4 Access

[2019: CP2.1]

A sanitary drainage system must ensure there is access for maintenance and clearing a blockage.

C2P5 Ventilation

[2019: CP2.1]

- (1) A sanitary drainage system must ensure there is adequate ventilation to avoid foul air and gases accumulating in the sanitary drainage and sewerage system.
- (2) A sanitary drainage system must ensure that ventilation is provided to avoid hydraulic load imbalance such that—
 - (a) there is less than a 1% likelihood during the annual peak hour that when any fixture discharges, air pressure at any trap seal exceeds ± 375 Pa difference from atmospheric pressure; or
 - (b) an equivalent level of safety to human health is achieved as a system complying to (a).

C2P6 Contamination

[2019:CP2.1]

- (1) A sanitary drainage system must ensure protection against internal contamination.
- (2) A sanitary drainage system must avoid the entry of water, foul air and gases from the system into buildings.
- (3) A sanitary drainage system must avoid the entry of surface water, sub-surface water and stormwater into the system.

C2P7 **Uncontrolled discharge**

[2019: CP2.1]

A sanitary *drainage* system must avoid *blockage* and uncontrolled discharge.

C2P8 **Damage**

[2019: CP2.1]

- (1) A sanitary *drainage* system must avoid damage from root penetration, superimposed loads or ground movement.
- (2) A sanitary *drainage* system must avoid damage to existing buildings or site works.
- (3) A sanitary *drainage* system must avoid damage to the *Network Utility Operator's* sewerage system or other *approved disposal system*.

Verification Methods

VIC C2V1

C2V1 **Velocity and liquid-to-air ratio**

[2019: CV2.1]

Compliance with C2P1 is achieved if the sanitary *drainage* system is designed to operate with—

- (a) a liquid-to-air ratio of between 1:1 and 0.65:0.35; and
- (b) a minimum velocity of 0.8 m/s; and
- (c) a maximum velocity of—
 - (i) 2 m/s under normal operating conditions; and
 - (ii) 3.5 m/s under surge conditions.

Explanatory Information:

1. The symbol 'm/s', used in C2V1, means 'metres per second'.
2. The purpose of the minimum velocity is to minimise the likelihood of *blockage* in the sanitary *drainage* system.
3. The maximum velocity is intended to minimise the likelihood of damage to the system.

VIC C2V2

C2V2 **Pressure testing**

[2019: CV2.2]

Compliance with C2P1 is achieved if the sanitary *drainage* system passes one or more of the pressure tests set out in Section 15 of AS/NZS 3500.2.

C2V3 **Determination of sanitary drainage wastewater flowrates**

[New for 2022]

- (1) Compliance with C2P1 for pipe sizing is verified for each sanitary *drainage* pipework section when the design flow rate is not less than—
 - (a) the probable simultaneous wastewater flow rate calculated in accordance with (2); or

- (b) the Discharge Unit (DU) value of the highest fixture connected upstream of the pipework section as given by Table C2V3b, in litres per second, whichever is greater.
- (2) For the purposes of (1)(a), for each pipework section, the design probable simultaneous wastewater flow rate must be calculated in accordance with the following:

$$Q_{Total} = K\sqrt{\sum DU + Q_{Other}}$$

- (3) In the equation shown at (2):
- (a) Q_{Total} = the probable simultaneous wastewater flowrate for that pipework section (l/s).
- (b) Q_{Other} = the sum of any other wastewater flowrates such as pumped discharges (l/s).
- (c) K = the frequency factor given in Table C2V3a (dimensionless).
- (d) $\sum DU$ = the sum of the discharge units as given in Table C2V3b connected upstream of that pipework section (dimensionless).

Table C2V3a: Frequency factors

Fixture usage	NCC Building Class	Frequency factor (K)
Intermittent use e.g. dwelling, guesthouse or office	1, 2, 3 or 4	0.5
Frequent use e.g. hospital, school, restaurant or hotel	5, 6, 7, 8, 9a or 9c	0.7
Congested use e.g. open to the general public	9b	1.0
Special use e.g. laboratory	Not applicable	1.2

Table C2V3b: Discharge units

Fixture	System 1 - Discharge Units (DU)	System 2 - Discharge Units (DU)	System 3 - Discharge Units (DU)
Basin	0.5	0.3	0.3
Shower	0.6	0.4	0.4
Urinal	0.8	0.5	0.4
Bath	0.8	0.6	1.3
Kitchen sink	0.8	0.6	1.3
Water closet	2.0	1.8	1.2
Washing machine - Up to 6 kg	0.8	0.6	0.6
Domestic dishwasher	0.8	0.6	0.2

Explanatory Information:

System types referred to in Table C2V3b are as follows:

- System 1 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 50%.
- System 2 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 70%.
- System 3 - A sanitary plumbing system where branch discharge pipes are designed with a filling degree of 100%.
- Systems 1 and 2 are similar to the fully vented modified system and System 3 is similar to the single stack system, as detailed in AS/NZS 3500.2.
- Filling degree is defined as the ratio between the height of fluid in a pipe (h) and the diameter of the pipe (D), or h/D.

Deemed-to-Satisfy Provisions

C2D1 Deemed-to-Satisfy Provisions

[2019: C2.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* C2P1 to C2P8 are satisfied by complying with C2D2 to C2D5.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

C2D2 Invert levels

[2019: C2.2]

The invert level of a trap or gully weir must be a minimum of 10 mm higher than the soffit of the pipe to which it connects.

NT C2D3

C2D3 Swimming pool drainage

[2019: C2.3]

Where pumped discharge from a *swimming pool* connects to a gully riser it must be installed in accordance with AS/NZS 3500.2.

NSW C2D4

NT C2D4

TAS C2D4

VIC C2D4

C2D4 Design, construction and installation ~~General requirements~~

[2019: C2.4]

~~The design, construction, installation, replacement, repair, alteration and maintenance of a~~ sanitary *drainage* system must be in accordance with AS/NZS 3500.2.

C2D5 Bushfire prone areas

[New for 2022]

A sanitary *drainage* system in a designated bushfire prone area must be in accordance with AS 3959.

Explanatory Information: Cross-volume considerations

NCC Volumes One and Two deal with a number of areas of on-site construction which are relevant to a sanitary *drainage* system. These include, but are not limited to, those listed in Table C2.

Table C2: Cross-volume considerations

Item	NCC Volume One Class 2 to 9 buildings	NCC Volume Two Class 1 and 10 buildings
Excavations for pipework adjacent to a building and footings	B1 Structural provisions	H1 Structure
Termite management for attachments to buildings and penetrations through a slab		
Penetrations for pipework through a vapour barrier		
Pipework in timber bearers and joists of solid timber or engineered wood products		
Fittings, fixtures and pipework installations in steel framed construction		
Penetrations through a fire-resisting wall or floor	C1 Fire resistance Performance Requirements and C4 Protection of openings	H3 Fire safety

DRAFT

Part C3 On-site wastewater management

Introduction to this Part

This Part sets out the requirements for any part of an *on-site wastewater management system* from the *point of discharge* of a sanitary *drainage* system up to and including the appropriate means of waste disposal.

Objectives

C301 Objective

[New for 2022]

The objective of this Part is to—

- (a) safeguard people from illness, injury or loss (including loss of amenity) due to the failure of an on-site wastewater management system installation; and
- (b) ensure that an on-site wastewater management system installation (including an installation provided for use by people with a disability) is suitable; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that an on-site wastewater management system installation is designed and is capable of being maintained so that throughout its serviceable life it will continue to satisfy Objectives (a) to (e).

Functional Statements

C3F1 On-site wastewater management

[New for 2022]

On-site wastewater management systems must collect, contain, treat, assimilate and process domestic wastewater, human excreta, or both so that public health and environmental standards required by the authority having jurisdiction are achieved.

Performance Requirements

C3P1 Health impacts

[New for 2022]

On-site wastewater management systems must protect public health by ensuring that—

- (a) risks associated with the discharge of treated wastewater and/or the end product from a composting toilet to the environment are minimised; and
- (b) foul air and gasses are prevented from accumulating within or entering into buildings; and
- (c) the likelihood of contamination of the drinking water supply is avoided.

C3P2 **Environmental impacts**

[New for 2022]

On-site wastewater management systems must protect the environment by ensuring that—

- (a) surface and ground water are not polluted; and
- (b) soil productivity is maintained or enhanced; and
- (c) the likelihood of contamination of soils, ground water and waterways is avoided.

C3P3 **Community systems**

[New for 2022]

On-site wastewater management systems must minimise the impacts on and maintain and enhance community amenity. They must ensure that the on-site wastewater management system design and its implementation contribute to improving and sustaining aesthetic values within individual properties and groups of properties.

C3P4 **Discharge to a Network Utility Operator sewer**

[New for 2022]

Where on-site wastewater management system discharges to the point of connection of a Network Utility Operator's sewer system, the connection must comply with the local Network Utility Operator requirements.

C3P5 **Design and construction**

[New for 2022]

On-site wastewater management systems that facilitate on-site storage, treatment, disposal or re-use of wastewater must be designed and constructed—

- (a) with required treatment and storage capacity for the volume of waste and frequency of disposal; and
- (b) with required size, strength and rigidity for the nature, flow rates, volume of wastes and/or waste products which must be processed; and
- (c) using materials which are impervious both to the waste for which disposal is required and to water; and
- (d) to avoid the likelihood of surface water and stormwater entering the system.

C3P6 **Land application systems**

[New for 2022]

On-site wastewater management systems and associated land application systems must—

- (a) complete the treatment, uptake and absorption of the final effluent within the boundaries of the approved area; and
- (b) avoid the likelihood of the creation of unpleasant odours or the accumulation of offensive matter; and
- (c) avoid the likelihood of stormwater run-off entering the system; and
- (d) avoid the likelihood of root penetration or ingress of ground water entering the system; and
- (e) protect against internal contamination; and
- (f) avoid the likelihood of unintended or uncontrolled discharge; and
- (g) avoid the likelihood of blockage and leakage; and
- (h) avoid the likelihood of damage from superimposed loads or ground movement; and
- (i) provide ventilation to avoid the likelihood of foul air and gases from accumulating in the system.

C3P7 **Access for maintenance**

[New for 2022]

- (1) On-site wastewater management systems that facilitate on-site storage, treatment, disposal or re-use of wastewater must—
- (a) provide vehicle access for collection, if necessary; and
 - (b) avoid the likelihood of unauthorised access by people; and
 - (c) permit cleaning, maintenance, measurement and performance sampling.
- (2) Land application systems must—
- (a) provide access, as required, for maintenance; and
 - (b) incorporate provisions, as required, for effective cleaning.

C3P8 **Uncontrolled discharge**

[New for 2022]

On-site wastewater management systems that facilitate on-site storage, treatment, disposal or re-use of wastewater must avoid the likelihood of uncontrolled discharge.

C3P9 **Identification**

[New for 2022]

On-site wastewater management systems that facilitate on-site storage, treatment, disposal or re-use of wastewater must permit the manufacturer model, serial number and designed capacity to be easily accessed and identifiable after installation.

Deemed-to-Satisfy Provisions

C3D1 **Application**

[New for 2022]

Performance Requirements C3P1 to C3P9 are satisfied by complying with C3D2 to C3D7.

C3D2 **Septic tanks**

[New for 2022]

A septic tank must be in accordance with AS/NZS 1546.1.

C3D3 **Composting toilets**

[New for 2022]

A waterless composting toilet must be in accordance with AS/NZS 1546.2.

C3D4 **Treatment units**

[New for 2022]

An on-site domestic wastewater treatment unit and secondary treatment system must be in accordance with AS 1546.3.

C3D5 **Domestic grey water treatment systems**

[New for 2022]

A domestic grey water treatment system must be in accordance with AS/NZS 1546.4.

C3D6 **Land application systems**

[New for 2022]

A domestic land application system must be in accordance with AS/NZS 1547.

C3D7 **Common effluent drainage systems**

[New for 2022]

A common effluent *drainage* system must be in accordance with AS/NZS 3500.2.

DRAFT

Section D Excessive noise

Part D1

Excessive noise

Objectives

D1O1 Objective

Functional Statements

D1F1 Excessive noise

Performance Requirements

D1P1 Undue noise

D1P2 Excessive noise

Deemed-to-Satisfy Provisions

D1D1 Deemed-to-Satisfy Provisions

D1D2 Undue noise

D1D3 Sound insulation

DRAFT

Part D1 Excessive noise

Introduction to this Part

This Part sets out the requirements to prevent excessive noise being generated from a *plumbing* and *drainage* system that could cause illness or *loss* of *amenity* to occupants in a building.

Objectives

D1O1	Objective	[2019: DO1]
The Objective of this Part is to—		
(a) safeguard people from illness, injury or <i>loss</i> (including <i>loss</i> of <i>amenity</i>) due to excessive noise of a <i>plumbing</i> and <i>drainage</i> system; and		
(b) ensure that a <i>plumbing</i> and <i>drainage</i> system installation throughout its serviceable life will continue to satisfy the requirements of Objective (a).		

Functional Statements

D1F1	Excessive noise	[2019: DF1]
<p>A <i>plumbing</i> and <i>drainage</i> systems must be designed and installed so as to operate in a way that avoids the likelihood of excessive noise of any part of the <i>plumbing</i> and <i>drainage</i> system, and minimises any adverse impact on building occupants.</p>		

Performance Requirements

VIC D1P1

D1P1	Undue noise	[2019: DP1.1]
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A *plumbing* and *drainage* systems must not create undue noise.

VIC D1P2

D1P2	Excessive noise	[2019: DP1.2]
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- (1) A *plumbing* and *drainage* systems must ~~be designed to~~ reduce the transmission of airborne and/or impact generated sound which may cause illness or *loss* of *amenity* to occupants.
- (2) The *required* sound insulation of a floor or wall must not be compromised by the incorporation or penetration of a *plumbing* or *drainage* system.

Applications:

D1P2 only applies to a *plumbing* or *drainage* system that is located in—

- (a) a *separating wall* of a Class 1 building; or
- (b) a Class 2, 3 or 9c building that is *required* to be sound rated.

Notes:

- (1) Part F7 in Volume One of the NCC contains *Performance Requirement* F7P1 through to F7P4 which cover sound transmission and insulation in walls and floors of Class 2, 3 and 9c buildings.
- (2) Part H4 in Volume Two of the NCC contains *Performance Requirement* H4P6 which covers sound insulation of walls in Class 1 buildings.

Deemed-to-Satisfy Provisions

D1D1 Deemed-to-Satisfy Provisions

[2019: D1.1]

NT D1D1(1)

VIC D1D1(1)

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement*—
 - (a) D1P1 is satisfied by complying with D1D2; and
 - (b) D1P2 is satisfied by complying with D1D3.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

D1D2 Undue noise

[2019: D1.2]

To prevent undue noise *plumbing* and *drainage* systems must comply with—

- (a) B1D4 for cold water services; or
- (b) B2D9 for heated water services; or
- (c) B3D3 for *non-drinking water* services; or
- (d) B4D2 for fire-fighting water services; or
- (e) B6D2 for rainwater services; or
- (f) B7D2 for rainwater storage; or
- (g) C1D3 for sanitary *plumbing* systems; or
- (h) C2D4 for sanitary *drainage* systems; or
- (i) C3D2, C3D3, C3D4, C3D5 and C3D6 for on-site wastewater management systems.

NT D1D3

D1D3 Sound insulation

[2019: D1.3]

- (1) If a *plumbing* or *drainage* system serves or passes through more than one *sole-occupancy unit* in a Class 2, 3 or 9c building, it must be separated from the rooms of any other *sole-occupancy unit* by construction with an $R_w + C_{tr}$ (airborne) not less than—

- (a) 40 if the adjacent room is a *habitable room* (other than a kitchen); or
 - (b) 25 if the adjacent room is a kitchen or a non-*habitable room*.
- (2) In Class 2, 3 or 9c buildings, a flexible coupling must be used to connect a pump to a *plumbing* or *drainage* system.
- (3) If a *plumbing* or *drainage* system is located in (or passes through) a *separating wall* in a Class 1 building, it must—
- (a) only be installed in *discontinuous construction*; and
 - (b) not be fixed to the wall of a dwelling that it does not serve; and
 - (c) have a gap not less than 10 mm between the pipe and a wall of a dwelling that it does not serve; and
 - (d) not be chased in if the *separating wall* is made of concrete or masonry.

Explanatory Information:

Specification 28 lists sound ratings for some common forms of construction. If any of these common forms of construction are used, the *plumbing* or *drainage* system must be installed in accordance with the requirements of that Specification.

DRAFT

Section E Facilities

Part E1

Facilities

Objectives

E1O1 Objective

Functional Statements

E1F1 Facilities

Performance Requirements

E1P1 Facilities for people with disability

Deemed-to-Satisfy Provisions

E1D1 Deemed-to-Satisfy Provisions

E1D2 General requirements

DRAFT

Part E1 Facilities

Introduction to this Part

This Part sets out the requirements to allow people with disability to use the facilities provided by a *plumbing* and *drainage* system.

Objectives

E1O1 Objective

[2019: EO1]

The Objective of this Part is to—

- (a) ensure that the facility of a *plumbing* and *drainage* system (including an installation provided for use by people with disability) is suitable; and
- (b) ensure that the facility of a *plumbing* and *drainage* system installation throughout its serviceable life will continue to satisfy the requirements of Objective (a).

Functional Statements

E1F1 Facilities

[2019: EF1]

The facility of a *plumbing* and *drainage* system must be designed and installed so as to be operable by people with disability.

Performance Requirements

E1P1 Facilities for people with disability

[2019: EP1.1]

Where a *plumbing* and *drainage* system is provided, supply taps or other operational controls must be *accessible* and suitable for use.

Deemed-to-Satisfy Provisions

E1D1 Deemed-to-Satisfy Provisions

[2019: E1.1]

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement E1P1* is satisfied by complying with E1D2.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with A2G2(3) and A2G4(3) as applicable.

E1D2 General requirements

[2019: E1.2]

Where supply taps or other operational controls are provided in sanitary facilities for people with disability they must be in accordance with—

- (a) AS 1428.1 (2001) and AS 1428.2 for passenger use areas of Class 9b and Class 10 public transport buildings;
and
- (b) AS 1428.1 (2009) for all other buildings.

Explanatory Information: Cross-volume considerations

Part F2 of NCC Volume One sets out the requirements for the design and construction of *accessible* sanitary facilities in Class 1b, 2 to 9 and 10a buildings.

DRAFT

Schedule 1

Definitions

Abbreviations

Symbols

Glossary

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Definitions**

Abbreviations

Abbreviation	Definitions
ABCB	Australian Building Codes Board
AC	Alternating Current
ACP	Aluminium Composite Panel
AS	Australian Standard
ASET	Available Safe Egress Time
ASTM	American Society for Testing and Materials
BCA	Building Code of Australia
BE	Fire blocks evacuation route
CCT	Correlated Colour Temperature
CF	Challenging fire
CHF	Critical Heat Flux
CRF	Critical Radiant Flux
CS	Fire starts in a concealed space
CSHGC	Constant for solar heat gain
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CU	Constant for conductance
DC	Direct Current
FED	Fractional Effective Dose
FI	Fire brigade intervention
FRL	Fire Resistance Level
GRP	Glass fibre reinforced polyester
HRR	Heat Release Rate
HS	Horizontal fire spread
IS	Rapid fire spread involving internal surface linings
ISO	International Organisation for Standardisation
LED	Light-Emitting Diode
MEPS	Minimum Energy Performance Standards
NABERS	National Australian Built Environment Rating System
NATA	National Association of Testing Authorities
NatHERS	Nationwide House Energy Rating Scheme
NCC	National Construction Code
PBDB	Performance-based design brief
PCA	Plumbing Code of Australia
PMV	Predicted Mean Vote
ppm	parts per million
PVC	Polyvinyl chloride
RC	Robustness check
RSET	Required Safe Egress Time
RW	Weighted sound reduction index
SF	Smouldering fire

**Public Comment Draft
Definitions**

Abbreviation	Definitions
SHGC	Solar Heat Gain Coefficient
SS	Structural stability and other property
STC	Sound Transmission Class
UF	Unexpected catastrophic failure
UPVC	Unplasticized polyvinyl chloride
UT	Fire in normally unoccupied room threatening occupants of other rooms
U-Value	Thermal transmittance
VS	Vertical fire spread involving external cladding or external openings

DRAFT

**Public Comment Draft
Definitions**

Symbols

Symbols	Definitions
°	degree(s)
°C	degree(s) Celsius
°CDB	degree(s) Celsius Dry Bulb
°CWB	degree(s) Celsius Wet Bulb
-e/MJ	equivalent per Megajoule(s)
µm	micrometre
dB(A)	decibels "A" scale weighting network
f'c	Characteristic compressive strength of concrete at 28 days
f'y	Yield stress used in design
G	Dead load
J	Joule(s)
J/kg.K	Joules per kilogram degree Kelvin
J/s.m ²	Joules per second square metre
K	Kelvin(s)
kg	kilogram(s)
kg/m	kilogram(s) per metre
kg/m ²	kilogram(s) per square metre
kg/m ³	kilogram(s) per cubic metre
kJ/m ² .hour	kilojoules per square metre hour
km	kilometre(s)
kPa	kilopascal(s)
kW/m ²	kilowatt(s) per square metre
kWheating	kilowatt(s) of heating
kWr	kilowatt(s) of refrigeration
L	litre(s)
L/min	litre(s) per minute
L/s	litre(s) per second
L/s.m ²	litre(s) per second square metre
Lumens/W	Lumens per Watt
lx	lux
m	metre(s)
m/s	metre(s) per second
m ²	square metre(s)
m ² .K/W	square metre Kelvin(s) per Watt
m ³	cubic metre(s)
m ³ /hour	cubic metre(s) per hour
m ³ /s	cubic metre(s) per second
mcd/m ²	millicandelas per square metre
min	minute(s)
MJ/hour	Megajoules per hour

Public Comment Draft Definitions

Symbols	Definitions
MJ/m ² .annum	Megajoules per square metre annum
mm	millimetre(s)
mm ²	square millimetre(s)
MW	megawatt(s)
N	newton(s)
N/m	Newton(s) per metre
Pa	pascal(s)
Pa/m	pascal(s) per metre
Q	Live load
s	second(s)
ULS	Ultimate limit state
V	Volt(s)
W	Watt(s)
W _{input power}	Watts of input power
W _r /W _{input power}	Watts of thermal refrigeration per watt of input power
W/kW _{rej}	Watts per kilowatt of heat rejected
W/m.K	Watts per metre degree Kelvin
W/m ²	Watts per square metre
°south	degree south
%	percent
>	greater than
<	less than
≤	less than or equal to
≥	equal to or more than

Glossary

Above ground rainwater tank: A rainwater tank that is not in any way set into the ground.

Accessible: Having features to enable use by people with a disability.

Accessway: A continuous *accessible* path of travel (as defined in AS 1428.1) to, into or within a building.

Accredited Testing Laboratory: One of the following:

- (a) An organisation accredited by the National Association of Testing Authorities (NATA) to undertake the relevant tests.
- (b) An organisation outside Australia accredited to undertake the relevant tests by an authority recognised by NATA through a mutual recognition agreement.
- (c) An organisation recognised as being an Accredited Testing Laboratory under legislation at the time the test was undertaken.

Activity support level: The degree to which occupants can undertake activities with respect to the likely *activity traits* and *occupant traits*.

Explanatory Information:

This term is used to articulate whether the height of a room or space is sufficient and by what degree. This is achieved by having regard to the room or space's intended use by occupants, through consideration of the defined terms '*activity traits*' and '*occupant traits*'.

- (a) For the purposes of Volume One, the features of the activities that will be undertaken in a *habitable room* or space.
- (b) For the purposes of Volume Two, the features of the activities that will be undertaken in a room or space.

Explanatory Information:

This term is used to describe the characteristics of the activities that will be undertaken in a room or space.

For example, the activities likely to be undertaken in a bedroom, and the associated features are—

- sleeping — a person laying horizontally; and
- resting — a person laying horizontally or sitting upright on the bed; and
- leisure activities, such as reading a book — a person sitting upright on the bed, with enough space to stretch their arms vertically; and
- dressing/changing clothes — a person standing with enough space to stretch their arms vertically.

Administering body: The body responsible for administering the *WaterMark Certification Scheme*.

Aged care building: A Class 9c building for residential accommodation of aged persons who, due to varying degrees of incapacity associated with the ageing process, are provided with *personal care services* and 24 hour staff assistance to evacuate the building during an emergency.

NSW

Air-conditioning: For the purposes of Section J of Volume One, a *service* that actively cools or heats the air within a space, but does not include a *service* that directly—

- (a) cools or heats cold or hot rooms; or
- (b) maintains specialised conditions for equipment or processes, where this is the main purpose of the *service*.

Alarm zone: For the purposes of *Specification 23*, an area of a building protected by one or more smoke alarms connected to one alarm circuit.

Alteration: In relation to a building, includes an addition or extension to a building.

Aluminium Composite Panel (ACP): Flat or profiled aluminium sheet material in composite with any type of materials.

Amenity: An attribute which contributes to the health, physical independence, comfort and well-being of people.

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Ancillary element: An element that is secondary to and not an integral part of another element to which it is attached.

Annual exceedance probability: The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

Annual greenhouse gas emissions: The theoretical amount of greenhouse gas emissions attributable to the energy used annually by a building's *services*, excluding kitchen exhaust and the like.

Appropriate authority: For the purposes of the Fire Safety Verification Method, means the relevant authority with the statutory responsibility to determine the particular matter satisfies the relevant *Performance Requirement*.

Explanatory Information:

The Appropriate Authority is typically the building surveyor or building certifier charged with the statutory responsibility to determine building compliance and issue the building permit / approval and occupancy certificate / approval.

NSW Appropriate authority

Appropriate authority: The relevant authority with the statutory responsibility to determine the particular matter.

Appropriately qualified person: A person recognised by the *appropriate authority* as having qualifications and/or experience in the relevant discipline in question.

Approved disposal system: A system for the disposal of sewage, sullage or stormwater approved by an authority having jurisdiction.

Articulated masonry: Masonry construction in which special provisions have been made for movement by articulation.

NSW Assembly building

SA Assembly building

Assembly building: A building where people may assemble for—

- (a) civic, theatrical, social, political or religious purposes including a library, theatre, public hall or place of worship; or
- (b) educational purposes in a *school*, *early childhood centre*, preschool, or the like; or
- (c) entertainment, recreational or sporting purposes including—
 - (i) a discotheque, nightclub or a bar area of a hotel or motel providing live entertainment or containing a dance floor; or
 - (ii) a cinema; or
 - (iii) a sports stadium, sporting or other club; or
- (d) transit purposes including a bus station, railway station, airport or ferry terminal.

Assessment Method: A method that can be used for determining that a *Performance Solution* or *Deemed-to-Satisfy Solution* complies with the *Performance Requirements*.

Atrium: A space within a building that connects 2 or more *storeys* and—

- (a) is enclosed at the top by a floor or roof (including a glazed roof structure); and
- (b) includes any adjacent part of the building not separated by an appropriate barrier to fire; but
- (c) does not include a stairwell, rampwell or the space within a *shaft*; and
- (d) for the purposes of (a) a space is considered enclosed if the area of the enclosing floor or roof is greater than 50% of the area of the space, measured in plan, of any of the *storeys* connected by the space.

Atrium well: A space in an *atrium* bounded by the perimeter of the openings in the floors or by the perimeter of the floors and the *external walls*.

Automatic: Designed to operate when activated by a heat, smoke or fire sensing device.

- (a) The time between ignition of a fire and the onset of untenable conditions in a specific part of a building.
- (b) The time referred to in (1) is the calculated interval between the time of ignition of a fire and the time at which conditions become such that the occupant is unable to take effective action to escape to a place of safety.

Average daylight factor: The ratio of the illumination level within a room provided by daylight to the level of daylight outside the building during overcast conditions.

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Average recurrence interval: ~~Applied to rainfall, means the expected or average interval between exceedances for a 5 minute duration rainfall intensity.~~

Average specific extinction area: The average specific extinction area for smoke as determined by AS 5637.1.

Backflow prevention device: An air gap, break tank or mechanical device that is designed to prevent the unplanned reversal of flow of water or *contaminants* into the water service or a *Network Utility Operator's* water supply.

Backpressure: A reversal of water flow caused by the downstream pressure becoming greater than the supply pressure.

Backsiphonage: A reversal of flow of water caused by negative pressure in the distributing pipes of a water service or supply.

Backstage: A space associated with, and adjacent to, a *stage* in a Class 9b building for scenery, props, equipment, dressing rooms, or the like.

Battery system: One or more chemical cells connected in series, parallel or a combination of the two for the purpose of electrical energy storage.

Blockage: An obstruction within a *water service or sanitary plumbing or drainage* system.

Boiler: A vessel or an arrangement of vessels and interconnecting parts, wherein steam or other vapour is generated, or water or other liquid is heated at a pressure above that of the atmosphere, by the application of fire, the products of combustion, electrical power, or similar high temperature means, and—

- (a) includes superheaters, reheaters, economisers, boiler piping, supports, mountings, valves, gauges, fittings, controls, the boiler settings and directly associated equipment; but
- (b) excludes a fully flooded or pressurised system where water or other liquid is heated to a temperature lower than the normal atmospheric boiling temperature of the liquid.

Bond breaker: A material used as part of a *waterproofing system* that prevents the *membrane* bonding to the substrate, bedding or lining.

Breaking surf: Any area of salt water in which waves break on an average of at least 4 days per week but does not include white caps or choppy water.

Explanatory Information:

Breaking surf normally occurs in areas exposed to the open sea. Breaking surf does not normally occur in sheltered areas, such as that which occurs around Port Phillip Bay, Sydney Harbour, Swan River, Derwent River and similar locations.

Brittle failure: Loss of strength to resist design actions without first undergoing significant deformation which, for the purposes of the *Performance Requirements*, may be taken to include (but is not limited to) buckling, fatigue failure and soil bearing failure.

Building complexity criteria: Are used to determine whether all or part of a building is low, medium, high or very high building complexity — the building complexity criteria are:

- (a) Attributes — the building is designed or constructed with any of the following sub-criteria:
 - (i) An *effective height* of more than 25 m.
 - (ii) One or more *Performance Solutions* used to demonstrate compliance with *Performance Requirements* relating to material and systems for structural safety.
 - (iii) One or more *Performance Solutions* used to demonstrate compliance with *Performance Requirements* relating to material and systems for fire safety.
 - (iv) In an area prone to natural disaster or adverse environmental conditions.
- (b) Class 2 — all or part of the building is Class 2 of three or more *storeys*.
- (c) Occupant numbers — the building is to be occupied by more than 100 people determined in accordance with D2D18.
- (d) Occupant characteristics — the building is to be occupied by more than 10 people who will require assistance to evacuate the building in an emergency.
- (e) Building Importance Level 4 — the building is determined to be Importance Level 4 in accordance with Table B1D3a.

Building complexity: high: Where a building meets three of *building complexity criteria* (a) (Attributes), (b) (Class 2), (c) (Occupant numbers), or (d) (Occupant characteristics).

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Building complexity: low: Where a building meets one only of *building complexity criteria* (a) (Attributes), (b) (Class 2), (c) (Occupant numbers), or (d) (Occupant characteristics).

Building complexity: medium: Where a building meets two of *building complexity criteria* (a) (Attributes), (b) (Class 2), (c) (Occupant numbers), or (d) (Occupant characteristics).

Building complexity: very high: Where a building meets—

- (a) all *building complexity criteria* (a) (Attributes), (b) (Class 2), (c) (Occupant numbers), and (d) (Occupant characteristics); or
- (b) *building complexity criterion* (e) (Building Importance Level 4).

Notes:

The NCC currently does not include corresponding technical requirements relating to the defined term '*building complexity criteria*' and the various building complexity levels. It is intended that these terms will be integrated into future editions of the NCC.

Buried rainwater tank: A rainwater tank that is set into and completely covered by earth.

Burnout: Exposure to fire for a time that includes *fire growth*, full development, and decay in the absence of intervention or automatic suppression, beyond which the fire is no longer a threat to building elements intended to perform *loadbearing* or fire separation functions, or both.

Carpark: A building that is used for the parking of motor vehicles but is neither a *private garage* nor used for the servicing of vehicles, other than washing, cleaning or polishing.

Cavity: A void between 2 leaves of masonry, or in masonry veneer construction, a void between a leaf of masonry and the supporting frame.

Cavity wall: For the purposes of F1V1 and H2V1, a wall that incorporates a drained cavity.

Certificate of Accreditation: A certificate issued by a State or Territory accreditation authority stating that the properties and performance of a building material or method of construction or design fulfil specific requirements of the NCC.

Certificate of Conformity: A certificate issued under the ABCB scheme for products and systems certification stating that the properties and performance of a building material or method of construction or design fulfil specific requirements of the NCC.

Certification body: A person or organisation operating in the field of material, product, form of construction or design certification that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ), and is accredited for a purpose other than as part of the CodeMark Australia Certification Scheme or *WaterMark Certification Scheme*.

Characteristic: The occupant data to be used in the modelling of access solutions which define how an occupant interacts with a building, i.e. occupant movement speeds, turning ability, reach capability, perception of luminance contrast and hearing threshold.

Clad frame: Timber or metal frame construction with exterior timber or sheet wall cladding that is not sensitive to minor movement and includes substructure masonry walls up to 1.5 m high.

Climate zone: Climate zone means an area defined in Figure 2 and in Tables 2a to 2h for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Table 2a: Climate zones for thermal design — Australian Capital Territory

Location	Climate zone
Canberra	7

Table 2b: Climate zones for thermal design — New South Wales

Location	Climate zone
Albury	4
Armidale	7
Batemans Bay	6

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Location	Climate zone
Bathurst	7
Bega	6
Bellingen Shire - Dorrigo Plateau	7
Bellingen Shire - Valley & seaboard	2
Bourke	4
Broken Hill	4
Byron Bay	2
Cobar	4
Coffs Harbour	2
Dubbo	4
Goulburn	7
Grafton	2
Griffith	4
Ivanhoe	4
Lismore	2
Lord Howe Island	2
Moree	4
Newcastle	5
Nowra	6
Orange	7
Perisher - Smiggins	8
Port Macquarie	5
Sydney East	5
Sydney West	6
Tamworth	4
Thredbo	8
Wagga Wagga	4
Williamtown	5
Wollongong	5
Yass	6

Table 2c: Climate zones for thermal design — Northern Territory

Location	Climate zone
Alice Springs	3
Darwin	1
Elliot	3
Katherine	1
Renner Springs	3
Tennant Creek	3

Table 2d: Climate zones for thermal design — Queensland

Location	Climate zone
Birdsville	3

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Location	Climate zone
Brisbane	2
Bundaberg	2
Cairns	1
Cooktown	1
Cunnamulla	3
Gladstone	2
Hervey Bay	2
Hughenden	3
Longreach	3
Mackay	2
Mount Isa	3
Normanton	1
Rockhampton	2
Roma	3
Southport	2
Toowoomba	5
Townsville	1
Warwick	5
Weipa	1

Table 2e: Climate zones for thermal design — South Australia

Location	Climate zone
Adelaide	5
Bordertown	6
Ceduna	5
Cook	4
Elliston	5
Kingscote	6
Leigh Creek	5
Lobethal	6
Loxton	5
Naracoorte	6
Marree	4
Mount Gambier	6
Murray Bridge	6
Oodnadatta	4
Port Augusta	4
Port Lincoln	5
Renmark	5
Tarcoola	4
Victor Harbour	6
Whyalla	4

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Table 2f: Climate zones for thermal design — Tasmania

Location	Climate zone
Burnie	7
Bicheno	7
Deloraine	7
Devonport	7
Flinders Island	7
Hobart	7
Huonville	7
King Island	7
Launceston	7
New Norfolk	7
Oatlands	7
Orford	7
Rossarden	7
Smithton	7
St Marys	7
Zeehan	7

Table 2g: Climate zones for thermal design — Victoria

Location	Climate zone
Anglesea	6
Ararat	7
Bairnsdale	6
Ballarat	7
Benalla	6
Bendigo	6
Bright	7
Colac	6
Dandenong	6
Echuca	4
Geelong	6
Hamilton	7
Horsham	6
Melbourne	6
Mildura	4
Portland	6
Sale	6
Shepparton	4
Swan Hill	4
Traralgon	6
Wangaratta	7
Warrnambool	6

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Location	<i>Climate zone</i>
Wodonga	6

Table 2h: Climate zones for thermal design — Western Australia

Location	<i>Climate zone</i>
Albany	6
Balladonia	4
Broome	1
Bunbury	5
Carnarvon	3
Christmas Island	1
Cocos Island	1
Derby	1
Esperance	5
Exmouth	1
Geraldton	5
Halls Creek	3
Kalgoorlie-Boulder	4
Karratha	1
Meekatharra	4
Northam	4
Pemberton	6
Perth	5
Port Hedland	1
Wagin	4
Wyndham	1

Figure 2: Climate zones for thermal design

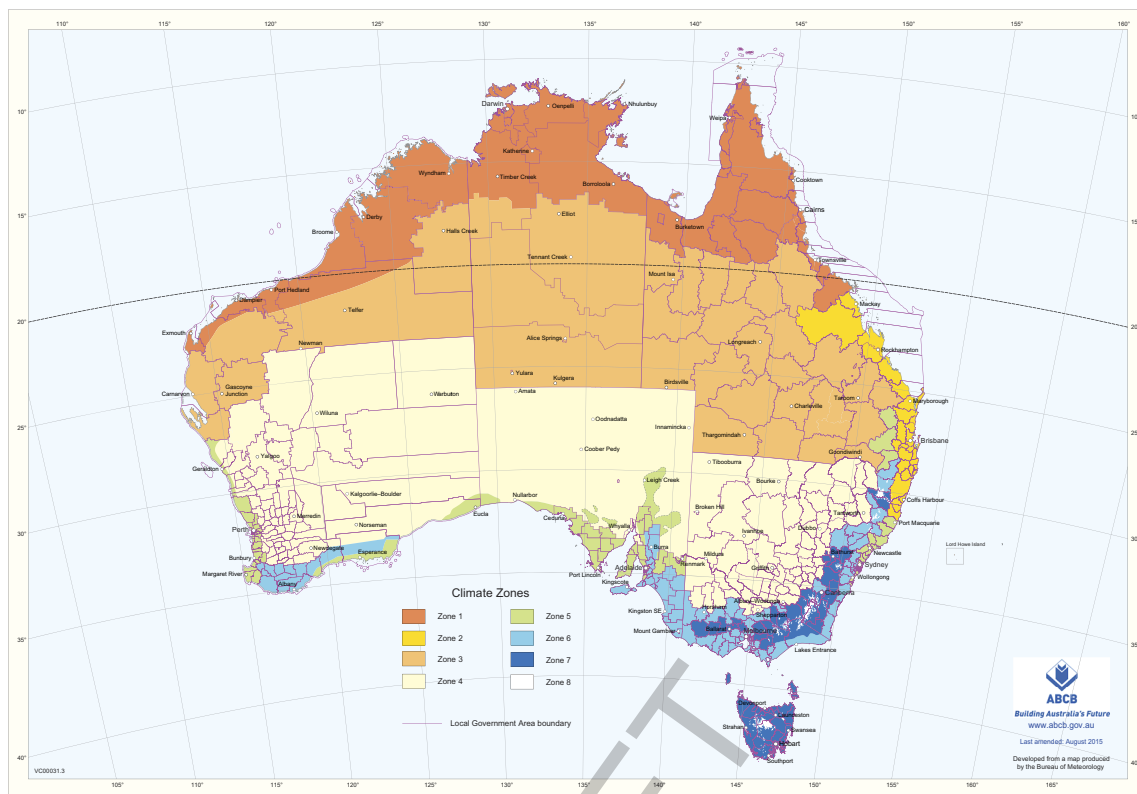


Figure Notes:

- (a) This map can be viewed in enlargeable form on the ABCB website at abcb.gov.au.
- (b) A Zone 4 area in South Australia, other than a council area, at an altitude greater than 300 m above the Australian Height Datum is to be considered as Zone 5.
- (c) The areas referred to in (2) have been defined in an enlarged format on the following maps produced by the Department of Planning, Transport and Infrastructure (these maps can be viewed on the Government of South Australia website at www.sa.gov.au):
 - (i) Adelaide Hills Climate Zone Map.
 - (ii) Barossa Council Climate Zone Map.
 - (iii) Regional Council of Goyder Climate Zone Map.
- (d) Locations in *climate zone 8* are in *alpine areas*.

Combustible: Applied to—

- (a) a material — means combustible as determined by AS 1530.1; and
- (b) construction or part of a building — means constructed wholly or in part of combustible materials.
- (a) For the purposes of Volume One, a wall that is common to adjoining buildings.
- (b) For the purposes of Volume Two and the ABCB Housing Provisions, a wall that is common to adjoining buildings other than Class 1 buildings.

Condensation: The formation of moisture on the surface of a building element or material as a result of moist air coming into contact with a surface which is at a lower temperature.

- (a) For the purposes of Volume One, a space within a building, including a ceiling or under-floor supply air plenum or return air plenum, where the environment is likely, by the intended use of the space, to have its temperature controlled by *air-conditioning*.
- (b) For the purposes of Volume Two, a space within a building that is heated or cooled by the building's *domestic services*, excluding a non-*habitable room* in which a heater with a capacity of not more than 1.2 kW or 4.3 MJ/hour is installed.

Connections: The parts that fix the members into the structure, through which the loads pass.

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Construction activity actions: Actions due to stacking of building materials or the use of equipment, including cranes and trucks, during construction or actions which may be induced by floor to floor propping.

Containment protection: The installation of a *backflow prevention device* at the *point of connection* of a *Network Utility Operator's* water supply to a site.

Contaminant: Any substance (including gases, liquids, solids or micro-organisms), energy (excluding noise) or heat, that either by itself or in combination with the same, similar or other substances, energy or heat, changes or is likely to change the physical, chemical or biological condition of water.

Controlled fill: Material that has been placed and compacted in layers with compaction equipment (such as a vibrating plate) within a defined moisture range to a defined density requirement.

Cooling load: The calculated amount of energy removed from the cooled spaces of the building annually by artificial means to maintain the desired temperatures in those spaces.

Critical radiant flux (CRF): The critical heat flux at extinguishment (CHF in kW/m²) as determined by AS ISO 9239.1.

Cross-connection: Any actual or potential connection between a water supply and any *contaminant*.

Curtain wall: A non-*loadbearing external wall* that is not a *panel wall*.

Damp-proof course (DPC): A continuous layer of impervious material placed in a masonry wall or pier, or between a wall or pier and a floor, to prevent the upward or downward migration of water.

Deemed-to-Satisfy Provisions: Provisions which are deemed to satisfy the *Performance Requirements*.

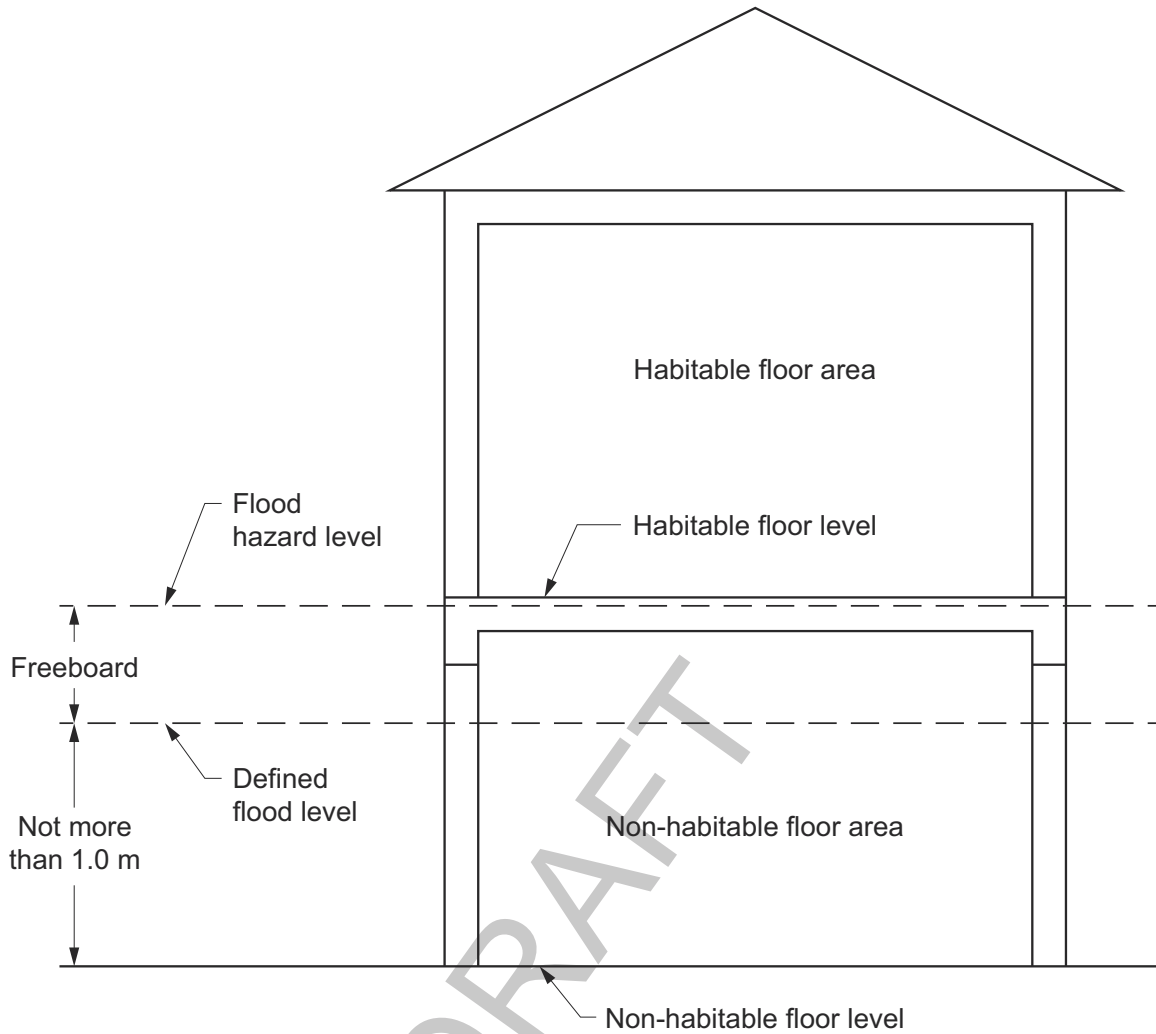
Deemed-to-Satisfy Solution: A method of satisfying the *Deemed-to-Satisfy Provisions*.

Defined flood event (DFE): The flood event selected for the management of flood hazard for the location of specific development as determined by the *appropriate authority*.

Defined flood level (DFL): The flood level associated with a *defined flood event* relative to a specified datum (see Figure 3).

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Figure 3: Identification of defined flood level, flood hazard level and freeboard



NSW Designated bushfire prone area

Designated bushfire prone area: Land which has been designated under a power of legislation as being subject, or likely to be subject, to bushfires.

Design bushfire: The characteristics of a bushfire, its initiation, spread and development, which arises from weather conditions, topography and fuel (vegetation) in a given setting, used to determine fire actions.

Design fire: The quantitative description of a representation of a fire within the *design scenario*.

Design scenario: The specific scenario of which the sequence of events is quantified and a *fire safety engineering* analysis is conducted against.

Design wind speed: The design gust wind speed for the area where the building is located, calculated in accordance with AS/NZS 1170.2 or AS 4055 (see [Table 4.3](#) for wind classes).

Wind classes

Non-cyclonic Region A and B	Cyclonic Region C and D
N1, N2, N3	C1
N4, N5, N6 (these wind classes are covered in the Housing Provisions Part 2.2 , Structural provisions).	C2, C3, C4 (these wind classes are covered in the Housing Provisions Part 2.2 , Structural provisions).

Table Notes:

- (a) Wind classification map identifying wind regions is contained in Housing Provisions [Part 2.2](#) (see [Figure 2.2.3](#)).
- (b) Information on wind classes for particular areas may be available from the *appropriate authority*.

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(c) “N” = non-cyclonic winds and “C” = cyclonic winds.

Detention centre: A building in which persons are securely detained by means of the built structure including a prison, remand centre, juvenile detention centre, holding cells or psychiatric detention centre.

Direct fix cladding wall: For the purposes of F1V1 and H2V1, means a wall with cladding attached directly to the wall framing without the use of a drained cavity.

- (a) A wall having a minimum 20 mm cavity between 2 separate leaves, and—
 - (i) for masonry, where wall ties are used to connect leaves, the ties are of the resilient type; and
 - (ii) for other than masonry, there is no mechanical linkage between the leaves, except at the periphery.
- (b) A staggered stud wall is not deemed to be discontinuous construction.

Display glazing: *Glazing* used to display retail goods in a shop or showroom directly adjacent to a walkway or footpath, but not including that used in a café or restaurant.

Domestic services: The basic engineering systems that use energy or control the use of energy; and—

- (a) includes—
 - (i) heating, air-conditioning, mechanical ventilation and artificial lighting; and
 - (ii) pumps and heaters for *swimming pools* and spa pools; and
 - (iii) heated water systems; but
- (b) excludes cooking facilities and portable appliances.

Drainage: Any ~~part of—sanitary drainage, liquid trade waste drainage or stormwater drainage system.~~

- (a) a sanitary drainage system, including any liquid trade waste drainage; or
- (b) a stormwater drainage system.

Drainage flange: A flange connected to a waste pipe, at the point at which it passes through the floor substrate, to prevent leakage and which enables tile bed drainage into the waste pipe.

Drainage riser: A waste pipe between the floor waste and the drainage system.

Drinking water: Water intended primarily for human consumption but which has other domestic uses.

Explanatory Information:

See also the Australian Drinking Water Guidelines produced by the National Health and Medical Research Council.

Ductile failure: Significant deformation of a member without loss of strength to resist design actions which, for the purposes of the *Performance Requirements*, may be taken to include (but not limited to) soil settlement and creep failure.

TAS Early childhood centre

VIC Early childhood centre

Early childhood centre: Any premises or part thereof providing or intending to provide a centre-based education and care service within the meaning of the Education and Care Services National Law Act 2010 (Vic), the Education and Care Services National Regulations and centre-based services that are licensed or approved under State and Territory children’s services law, but excludes education and care primarily provided to school aged children in outside school hours settings.

Effective height: The vertical distance between the floor of the lowest *storey* included in the calculation of *rise in storeys* and the floor of the topmost *storey* (excluding the topmost *storey* if it contains only heating, ventilating, lift or other equipment, water tanks or similar service units).

Efficacy: The degree to which a system achieves a design objective given that it performs to a level consistent with the system specification during the relevant fire scenario.

Electricity network substation: A building in which high voltage supply is converted or transformed and which is controlled by a licensed network service provider designated under a power of legislation.

Electric passenger lift: A power-operated lift for raising or lowering people in a car in which the motion of the car is obtained from an electric motor mechanically coupled to the hoisting mechanism.

Electrohydraulic passenger lift: A power-operated lift for raising or lowering people in a car in which the motion of the

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car is obtained from the action of liquid under pressure acting on a piston or ram, the pressure being generated by a pump driven by an individual electric motor.

Engaged pier: A pier bonded to a masonry wall by course bonding of masonry units or by masonry ties.

- (a) For the purposes of Section J in Volume One, the parts of a building's *fabric* that separate a *conditioned space* or *habitable room* from—
 - (i) the exterior of the building; or
 - (ii) a non-*conditioned space* including—
 - (A) the floor of a rooftop plant room, lift-machine room or the like; and
 - (B) the floor above a *carpark* or warehouse; and
 - (C) the *common wall* with a *carpark*, warehouse or the like.
- (b) For the purposes of Part H6 in Volume Two and Section 13 of the Housing Provisions, the parts of a building's *fabric* that separate artificially heated or cooled spaces from—
 - (i) the exterior of the building; or
 - (ii) other spaces that are not artificially heated or cooled.

Equivalent: Equivalent to the level of health, safety and amenity provided by the *Deemed-to-Satisfy Provisions*.

Evacuation route: The continuous path of travel (including *exits*, *public corridors* and the like) from any part of a building, including within a *sole-occupancy unit* in a Class 2 or 3 building or Class 4 part, to a *safe place*.

Evacuation time: The time calculated from when the emergency starts for the occupants of the building to evacuate to a *safe place*.

- (a) Any, or any combination of the following if they provide egress to a road or *open space*:
 - (i) An internal or external stairway.
 - (ii) A ramp.
 - (iii) A *fire-isolated passageway*.
 - (iv) A doorway opening to a road or *open space*.
- (b) A *horizontal exit* or a *fire-isolated passageway* leading to a *horizontal exit*.

TAS Expert Judgement

Expert Judgement: The judgement of an expert who has the qualifications and experience to determine whether a *Performance Solution* or *Deemed-to-Satisfy Solution* complies with the *Performance Requirements*.

Explanatory Information:

Contemporary and relevant qualifications and/or experience are necessary to determine whether a *Performance Solution* complies with the *Performance Requirements*. The level of qualification and/or experience may differ depending on the complexity of the proposal and the requirements of the regulatory authority. Practitioners should seek advice from the authority having jurisdiction or *appropriate authority* for clarification as to what will be accepted.

Exposed joint: A construction joint, control joint, expansion joint, contraction joint or movement joint that is exposed to rainwater.

- (a) For the purposes of Volume One, an outer wall of a building which is not a *common wall*.
- (b) For the purposes of Volume Two, an outer wall of a building which is not a *separating wall*.

Extra-low voltage: A *voltage* not exceeding 50 V AC or 120 V ripple-free DC.

Fabric: The basic building structural elements and components of a building including the roof, ceilings, walls, glazing and floors.

SA Farm building

Farm building: A Class 7 or 8 building located on land primarily used for *farming*—

- (a) that is—
 - (i) used in connection with *farming*; or
 - (ii) used primarily to store one or more *farm vehicles*; or

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- (iii) a combination of (i) and (ii); and
- (b) in which the total number of persons accommodated at any time does not exceed one person per 200 m² of floor area or part thereof, up to a maximum of 8 persons; and
- (c) with a total *floor area* of not more than 3500 m².

Farming: Includes—

- (a) cultivating, propagating and harvesting plants or fungi or their products or parts, including seeds, spores, bulbs or the like, but does not include forestry; or
- (b) maintaining animals in any physical environment for the purposes of—
 - (i) breeding them; or
 - (ii) selling them; or
 - (iii) acquiring and selling their bodily produce such as milk, wool, eggs or the like; or
- (c) a combination of (a) and (b),

but does not include forestry or maintaining animals for sport or recreational purposes.

Farm shed: A single *storey* Class 7 or 8 building located on land primarily used for *farming*—

- (a) that is—
 - (i) used in connection with *farming*; or
 - (ii) used primarily to store one or more *farm vehicles*; or
 - (iii) a combination of (i) and (ii); and
- (b) occupied neither frequently nor for extended periods by people; and
- (c) in which the total number of persons accommodated at any time does not exceed 2; and
- (d) with a total *floor area* of more than 500 m² but not more than 2000 m².

Farm vehicle: A vehicle used in connection with *farming*.

Fatigue failure: Fracture of a material through progressive brittle cracking under repeated alternating or cyclic stresses of an intensity considerably less than strength under static load.

Finished ground level: For the purposes of H1D4 and H2D3 in Volume Two and Section 4 of the Housing Provisions, means the ground level adjacent to footing systems at the completion of construction and landscaping.

Fire actions: Each of the following—

- (a) airborne embers; and
- (b) burning debris and/or accumulated embers adjacent to building elements; and
- (c) heat transfer from combustible materials within the site; and
- (d) radiant heat from a bushfire front; and
- (e) flame contact from a bushfire front.

Fire brigade: A statutory authority constituted under an Act of Parliament having as one of its functions, the protection of life and property from fire and other emergencies.

Fire brigade station: For the purposes of E1D2(1)(b) and I3D9, means a state or territory government operated premises which is a station for a *fire brigade*.

Fire compartment: Either—

- (a) the total space of a building; or
- (b) when referred to in—
 - (i) the *Performance Requirements* — any part of a building separated from the remainder by barriers to fire such as walls and/or floors having an appropriate resistance to the spread of fire with any openings adequately protected; or
 - (ii) the *Deemed-to-Satisfy Provisions* — any part of a building separated from the remainder by walls and/or floors each having an FRL not less than that *required* for a *fire wall* for that type of construction and where all openings in the separating construction are protected in accordance with the *Deemed-to-Satisfy Provisions* of the relevant Part.

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Fire growth: The stage of fire development during which the *heat release rate* and the temperature of the fire are generally increasing.

Fire hazard: The danger in terms of potential harm and degree of exposure arising from the start and spread of fire and the smoke and gases that are thereby generated.

Fire hazard properties: The following properties of a material or assembly that indicate how they behave under specific fire test conditions:

- (a) *Average specific extinction area*, *critical radiant flux* and *Flammability Index*, determined as defined in Schedule 2.
- (b) *Smoke-Developed Index*, *smoke development rate* and *Spread-of-Flame Index*, determined in accordance with Specification 3.
- (c) *Group number* and *smoke growth rate index* ($SMOGR_{RC}$), determined in accordance with Specification 7.

Fire intensity: The rate of release of calorific energy in watts, determined either theoretically or empirically, as applicable.

Fire-isolated passageway: A corridor, hallway or the like, of *fire-resisting construction*, which provides egress to or from a *fire-isolated stairway* or *fire-isolated ramp* or to a road or *open space*.

Fire-isolated ramp: A ramp within a *fire-resisting* enclosure which provides egress from a *storey*.

Fire-isolated stairway: A stairway within a *fire-resisting shaft* and includes the floor and roof or top enclosing structure.

- (a) The sum of the net calorific values of the *combustible* contents which can reasonably be expected to burn within a *fire compartment*, including furnishings, built-in and removable materials, and building elements.
- (b) For the purposes of (1), the calorific values must be determined at the ambient moisture content or humidity (the unit of measurement is MJ).

Fire-protected timber: *Fire-resisting* timber building elements that comply with Specification 10.

Fire-protective covering: Any one or more of the following:

- (a) 13 mm fire-protective grade plasterboard.
- (b) 12 mm cellulose cement flat sheeting complying with AS/NZS 2908.2 or ISO 8336.
- (c) 12 mm fibrous plaster reinforced with 13 mm x 13 mm x 0.7 mm galvanised steel wire mesh located not more than 6 mm from the exposed face.
- (d) Other material not less fire-protective than 13 mm fire-protective grade plasterboard, fixed in accordance with the normal trade practice for a fire-protective covering.

Fire-resistance level (FRL): The grading periods in minutes determined in accordance with Specifications 1 and 2, for the following criteria—

- (a) *structural adequacy*; and
- (b) *integrity*; and
- (c) *insulation*,

and expressed in that order.

Notes:

A dash means there is no requirement for that criterion. For example, 90/–/– means there is no requirement for an FRL for *integrity* and *insulation*, and –/–/– means there is no requirement for an FRL.

Fire-resisting construction: For the purposes of Volume One, means one of the Types of construction referred to in Part C2 of Volume One.

- (a) For the purposes of Volume One, applied to a building element, having an FRL appropriate for that element.
- (b) For the purposes of Volume Two, applied to a *structural member* or other part of a building, having the FRL *required* for that *structural member* or other part.

Fire safety engineering: Application of engineering principles, rules and *expert judgement* based on a scientific appreciation of the fire phenomenon, often using specific *design scenario*, of the effects of fire and of the reaction and behaviour of people in order to—

- (a) save life, protect property and preserve the environment and heritage from destructive fire; and
- (b) quantify the hazards and risk of fire and its effects; and

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- (c) mitigate fire damage by proper design, construction, arrangement and use of buildings, materials, structures, industrial processes and transportation systems; and
- (d) evaluate analytically the optimum protective and preventive measures, including design, installation and maintenance of active and passive fire and life safety systems, necessary to limit, within prescribed levels, the consequences of fire.

Fire safety system: One or any combination of the methods used in a building to—

- (a) warn people of an emergency; or
- (b) provide for safe evacuation; or
- (c) restrict the spread of fire; or
- (d) extinguish a fire,

and includes both active and passive systems.

Fire-source feature: Any one or more of the following:

- (a) The far boundary of a road, river, lake or the like adjoining the allotment.
- (b) A side or rear boundary of the allotment.
- (c) An *external wall* of another building on the allotment which is not a Class 10 building.

Fire wall: A wall with an appropriate resistance to the spread of fire that divides a *storey* or building into *fire compartments*.

Fixed wired: For the purposes of [Specification 23](#), a system of electrical wiring (either AC or DC), in which cables are fixed or supported in position.

Flammability Index: The index number as determined by AS 1530.2.

Flashing: A strip or sleeve of impervious material dressed, fitted or built-in to provide a barrier to moisture movement, or to divert the travel of moisture, or to cover a joint where water would otherwise penetrate to the interior of a building.

- (a) Perimeter flashing: A flashing used at the floor-wall junction.
- (b) Vertical flashing: A flashing used at wall junctions within shower areas.

Flashover: In relation to *fire hazard properties*, means a *heat release rate* of 1 MW.

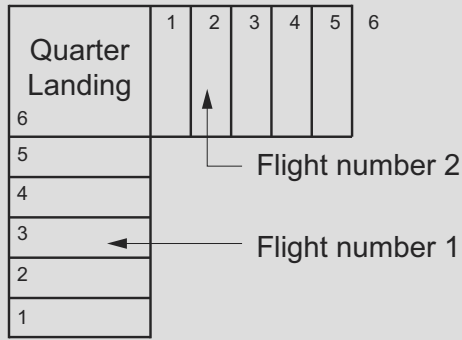
Flight: That part of a stair that has a continuous series of *risers*, including *risers* of *winders*, not interrupted by a *landing* or floor.

Explanatory Information:

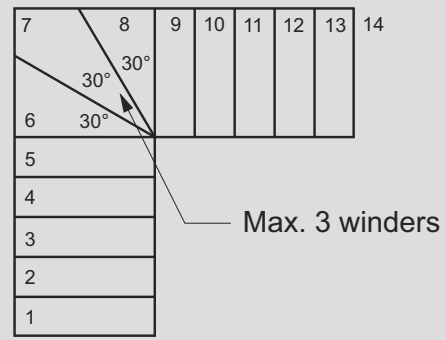
A flight is the part of a stair that has a continuous slope created by the nosing line of treads. The length of a flight is limited to restrict the distance a person could fall down a stair.

Quarter *landings*, as shown in [Explanatory Figure 1](#), are considered sufficient to halt a person's fall and therefore are considered for the purposes of Volume Two and the ABCB Housing Provisions not to be part of the flight.

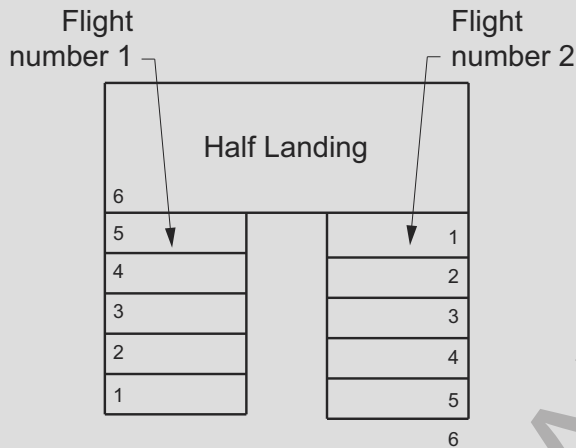
Figure 1 (explanatory): Identification of stair flights — Plan view



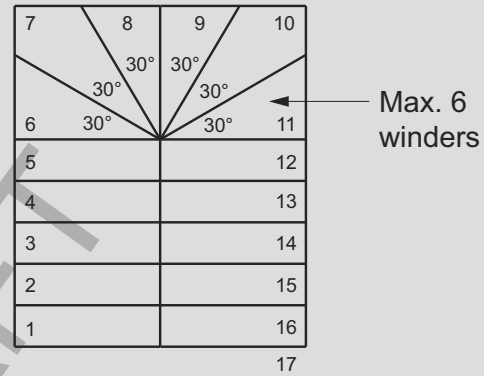
(a) Quarter landing stairway – 2 flights



(b) Continuous stairway – 1 flight
(90° change in direction)



(c) Half landing stairway – 2 flights



(d) Continuous stairway – 1 flight
(180° change in direction)

VIC Flood hazard area

Flood hazard area: The *site* (whether or not mapped) encompassing land lower than the *flood hazard level* which has been determined by the *appropriate authority*.

Flood hazard level (FHL): The flood level used to determine the height of floors in a building and represents the *defined flood level* plus the *freeboard* (see Figure 3).

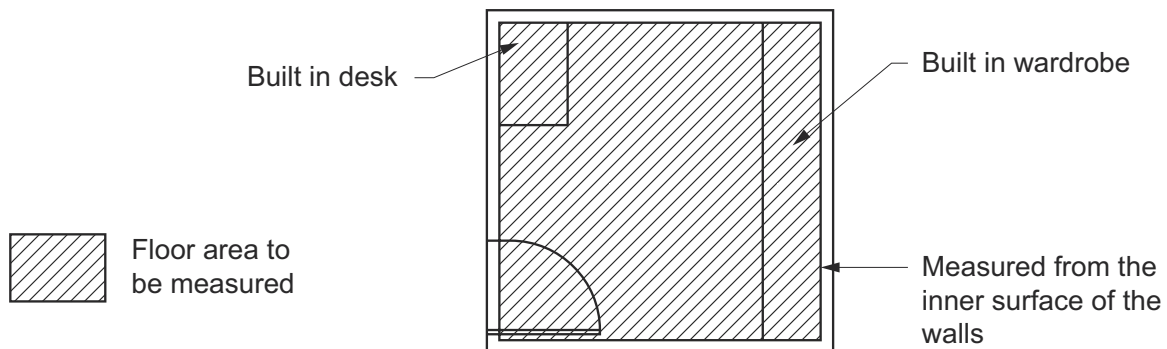
(a) For the purposes of Volume One—

- (i) in relation to a building — the total area of all *storeys*; and
- (ii) in relation to a *storey* — the area of all floors of that *storey* measured over the enclosing walls, and includes—
 - (A) the area of a *mezzanine* within the *storey*, measured within the finished surfaces of any *external walls*; and
 - (B) the area occupied by any *internal wall* or partitions, any cupboard, or other built-in furniture, fixture or fitting; and
 - (C) if there is no enclosing wall, an area which has a use that contributes to the *fire load* or impacts on the safety, health or amenity of the occupants in relation to the provisions of the BCA; and
- (iii) in relation to a room — the area of the room measured within the *internal* finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting; and
- (iv) in relation to a *fire compartment* — the total area of all floors within the *fire compartment* measured within the finished *internal* surfaces of the bounding construction, and if there is no bounding construction, includes an area which has a use which contributes to the *fire load*; and
- (v) in relation to an *atrium* — the total area of all floors within the *atrium* measured within the finished surfaces of the bounding construction and if no bounding construction, within the *external walls*.

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- (b) For the purposes of Volume Two and the ABCB Housing Provisions, in relation to a room, the area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting (see Figure 4).

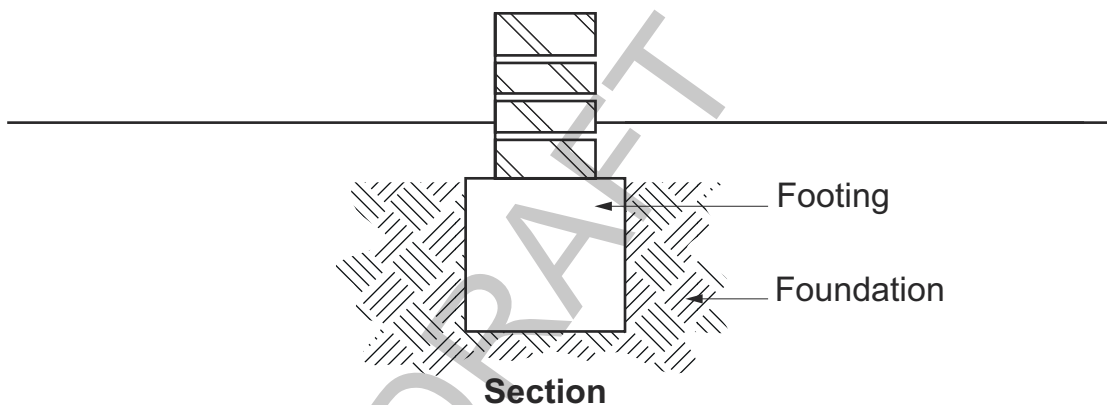
Figure 4: Identification of floor area of a room



Floor waste: A grated inlet within a graded floor intended to drain the floor surface.

Foundation: The ground which supports the building (see Figure 5).

Figure 5: Identification of foundation



Fractional effective dose (FED): The fraction of the dose (of thermal effects) that would render a person of average susceptibility incapable of escape.

Explanatory Information:

The definition for FED has been modified from the ISO definition to be made specific for the Fire Safety *Verification Method*. The use of CO or CO₂ as part of FED is not part of that *Verification Method*. This is because the ability to measure CO in a repeatable test varies by two orders of magnitude for common cellulosic fuel.

VIC Freeboard

Freeboard: The height above the *defined flood level* as determined by the *appropriate authority*, used to compensate for effects such as wave action and localised hydraulic behaviour.

Fully developed fire: The state of total involvement of the majority of available combustible materials in a fire.

- (a) For the purposes of Section J, a transparent or translucent element and its supporting frame located in the *envelope*, and includes a *window* other than a *roof light*.
- (b) For the purposes of Part H6 and Section 13 of the Housing Provisions—
- a transparent or translucent element and its supporting frame located in the external *fabric* of the building; and
 - includes a *window* other than a *roof light*.

Going: The horizontal dimension from the front to the back of a tread less any overhang from the next tread or *landing* above (see Figure 11.2.2f in the Housing Provisions).

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Gradual failure: Relatively slow collapse of a structure that occurs through significant plastic deformation and/or moment redistribution.

Green Star: The building sustainability rating scheme managed by the Green Building Council of Australia.

Group number: The number of one of 4 groups of materials used in the regulation of *fire hazard properties* and applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

Habitable room: A room used for normal domestic activities, and—

- (a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom; but
- (b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.

Hazard Rating: A level of potential toxicity that may cause contamination in a drinking water system-, having a Theeerae
Ating of either Low Hazard, Medium Hazard or High Hazard, is determined in accordance with NCC Volume Three.
Specification 41, for any Deemed to Satisfy Solution.

Health-care building: A building whose occupants or patients undergoing medical treatment generally need physical assistance to evacuate the building during an emergency and includes—

- (a) a public or private hospital; or
- (b) a nursing home or similar facility for sick or disabled persons needing full-time care; or
- (c) a clinic, day surgery or procedure unit where the effects of the predominant treatment administered involve patients becoming non-ambulatory and requiring supervised medical care on the premises for some time after the treatment.

Heated water: Water that has been intentionally heated; normally referred to as hot water or warm water.

Heating load: The calculated amount of energy delivered to the heated spaces of the building annually by artificial means to maintain the desired temperatures in those spaces.

Heat release: The thermal energy produced by combustion (measured in kJ).

Heat release rate (HRR): The rate of thermal energy production generated by combustion, measured in kW (preferred) or MW.

High Hazard: Any condition, device or practice which, in connection with a water supply, has the potential to cause death.

High wind area: A region that is subject to *design wind speed* more than N3 or C1 (see Table 3).

Hob: The upstand at the perimeter to a shower area.

Horizontal exit: A *required* doorway between 2 parts of a building separated from each other by a *fire wall*.

Hours of operation: The number of hours when the occupancy of the building is greater than 20% of the peak occupancy.

- (a) For the purposes of Volume One, means software accredited under the Nationwide House Energy Rating Scheme.
- (b) For the purposes of Volume Two—
 - (i) applied to H6V2—software accredited or previously accredited under the Nationwide House Energy Rating Scheme and the additional functionality provided in non-regulatory mode; and
 - (ii) applied to H6D3—software accredited under the Nationwide House Energy Rating Scheme.

Explanatory Information:

The Nationwide House Energy Rating Scheme (NatHERS) refers to the Australian Governments' scheme that facilitates consistent energy ratings from software tools which are used to assess the potential thermal efficiency of dwelling envelopes.

Housing Provisions: The requirements for Class 1 and 10 buildings referenced in Volume Two of the National Construction Code, as published by the Australian Building Codes Board.

Illuminance: The luminous flux falling onto a unit area of surface.

Illumination power density: The total of the power that will be consumed by the lights in a space, including any lamps, ballasts, current regulators and control devices other than those that are plugged into socket outlets for intermittent use such as floor standing lamps, desk lamps or work station lamps, divided by the area of the space, and expressed

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in W/m².

Explanatory Information:

Illumination power density relates to the power consumed by the lighting system and includes the light source or luminaire and any control device. The power for the lighting system is the illumination power load. This approach is more complicated than the *lamp power density* approach but provides more flexibility for a dwelling with sophisticated control systems.

The area of the space refers to the area the lights serve. This could be considered a single room, open plan space, verandah, balcony or the like, or the total area of all these spaces.

Importance Level: A number which ranks the relative importance of structures and buildings (shown in Table 3) based on the potential risk to life resulting from their scale and/or use.

Table 3: Importance Levels for building types

<u>Importance Level</u>	<u>Description</u>
<u>1</u>	<u>Structures presenting a low degree of hazard to life and other property</u>
<u>2</u>	<u>Normal structures and structures not in other <i>Importance Levels</i></u>
<u>3</u>	<u>Structures that as a whole may contain people in crowds or contents of high value to the community or pose risks to people in crowds</u>
<u>4</u>	<u>Structures with special post-disaster functions</u>
<u>5</u>	<u>Special structures</u>

Explanatory Information:

Examples of Importance Levels of certain buildings, structures and facilities

- (a) Importance Level 1, include but not limited to:
 - (i) Structures with a total floor area < 30 m².
 - (ii) Farm buildings, isolated structures, towers in rural situations.
- (b) Importance Level 2, include but not limited to:
 - (i) Buildings not included in *Importance Level 1, 3 or 4.*
 - (ii) Single family dwellings.
- (c) Importance Level 3, include but not limited to:
 - (i) Where more than 300 people can congregate in one area.
 - (ii) Day care facilities with a capacity greater than 150.
 - (iii) Primary school or secondary school facilities with a capacity greater than 250.
 - (iv) Colleges or adult education facilities with a capacity greater than 500.
 - (v) Health care facilities with a capacity of 50 or more residents.
 - (vi) Airport terminals, principal railway stations with a capacity greater than 250.
 - (vii) Correctional institutions.
 - (viii) Multi-occupancy residential, commercial (including shops), industrial, office and retailing buildings designed to accommodate more than 5000 people and with a gross area greater than 10,000 m².
 - (ix) Public assembly buildings, theatres and cinemas of greater than 1,000 m².
 - (x) Emergency medical and other emergency facilities not designated as post-disaster.
 - (xi) Power-generating facilities, water treatment and waste-water treatment facilities and other public utilities not designated as post-disaster.
 - (xii) Buildings and facilities not designated as post-disaster containing hazardous materials capable of causing hazardous conditions that do not extend beyond the property boundaries.
- (d) Importance Level 4, include but not limited to:

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- (i) Buildings and facilities designated as essential facilities buildings and facilities with special post -disaster functions medical emergency or surgical facilities.
- (ii) Emergency service facilities such as fire, police stations and emergency vehicle garages.
- (iii) Utilities or emergency supplies or installations required as backup for buildings and facilities of *Importance Level 4*.
- (iv) Designated emergency shelters, designated emergency centres and ancillary facilities.
- (v) Buildings and facilities containing hazardous materials capable of causing hazardous conditions that extend beyond the property boundaries.
- (e) *Importance Level 5*, include but not limited to:
 - (i) Structures that have special functions or whose failure poses catastrophic risk to a large area (e.g. 100 km²) or a large number of people (e.g. 100,000).
 - (ii) Major dams, extreme hazard facilities.

Inclined lift: A power-operated device for raising or lowering people within a carriage that has one or more rigid guides on an inclined plane.

Individual protection: The installation of a *backflow prevention device* at the point where a water service connects to a single fixture or appliance.

Individual risk: The frequency at which an individual may be expected to sustain a given level of harm from the realisation of a specified hazard.

Insulation: In relation to an FRL, the ability to maintain a temperature on the surface not exposed to the furnace below the limits specified in AS 1530.4.

Integrity: In relation to an FRL, the ability to resist the passage of flames and hot gases specified in AS 1530.4.

- (a) For the purposes of Volume One, excludes a *common wall* or a party wall.
- (b) For the purposes of Volume Two, excludes a *separating wall*, *common wall* or party wall.

Interstitial condensation: The *condensation* of moisture on surfaces between material layers inside the building component.

Irrigation system: An irrigation system of the following types:

- (a) Type A— all permanently open outlets and piping more than 150mm above finished ground level, not subject to ponding or back-pressure and not involving injection systems.
- (b) Type B— irrigation systems in domestic or residential buildings with piping or outlets installed less than 150mm above finished surface level and not involving injection systems.
- (c) Type C— irrigation systems in other than domestic or residential buildings with piping outlets less than 150mm above finished surface level and not involving injection systems.
- (d) Type D— irrigation systems where fertilizers, herbicides, nemacides or the like are injected or siphoned into the system.

JAS-ANZ: The Joint Accreditation System of Australia and New Zealand.

Lamp power density: The total of the maximum power rating of the lamps in a space, other than those that are plugged into socket outlets for intermittent use such as floor standing lamps, desk lamps or work station lamps, divided by the area of the space, and expressed in W/m².

Explanatory Information:

Lamp power density is a simple means of setting energy consumption at an efficient level for Class 1 and associated Class 10a buildings.

Lamp refers to the globe or globes that are to be installed in a permanently wired light fitting. The maximum power of a lamp is usually marked on the fitting as the maximum allowable wattage.

The area of the space refers to the area the lights serve. This could be considered a single room, open plan space, verandah, balcony or the like, or the total area of all these spaces.

Landing: An area at the top or bottom of a *flight* or between two *flights*.

Latent heat gain: The heat gained by the vapourising of liquid without change of temperature.

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Lateral support: A support (including footing, buttress, cross wall, beam, floor or braced roof structure) that effectively restrains the wall or pier at right angles to the face of the wall or pier.

Lightweight construction: Construction which incorporates or comprises—

- (a) sheet or board material, plaster, render, sprayed application, or other material similarly susceptible to damage by impact, pressure or abrasion; or
- (b) concrete and concrete products containing pumice, perlite, vermiculite, or other soft material similarly susceptible to damage by impact, pressure or abrasion; or
- (c) masonry having a width of less than 70 mm.

Loadbearing: Intended to resist vertical forces additional to those due to its own weight.

Loadbearing wall: For the purposes of H1D4, H2D3 and Section 4 of the Housing Provisions, means any wall imposing on the footing a load greater than 10 kN/m.

Loss: Physical damage, financial loss or loss of *amenity*.

Low Hazard: Any condition, device or practice which, in connection with a water supply, would constitute a nuisance by colour, odour or taste but does not have the potential to injure or endanger health.

Low lead: Where a plumbing product or material in contact with drinking water is calculated using a weighted average lead content of no more than 0.25%.

Low rainfall intensity area: An area with a 5 minute rainfall intensity for an annual exceedance probability of 5% average recurrence interval of 20 years of not more than 125 mm/hour.

Explanatory Information:

Rainfall intensity figures can be obtained from Tables 7.4.3d to 7.4.3k in the Housing Provisions.

Low-rise, low-speed constant pressure lift: A power-operated low-rise, low-speed device for raising or lowering people with limited mobility on a carriage that is controlled by the application of constant pressure to a control.

Low-rise platform lift: A power-operated device for raising or lowering people with limited mobility on a platform, that is controlled automatically or by the application of constant pressure to a control.

Low voltage: A *voltage* exceeding *extra-low voltage*, but not exceeding 1000 V AC or 1500 V DC.

Luminance contrast: The light reflected from one surface or component, compared to the light reflected from another surface or component.

Massive timber: An element not less than 75 mm thick as measured in each direction formed from solid and laminated timber.

Maximum acceptable annual probability of structural failure of structures, buildings, members and connections: The probability that, in any year, there could be a structural failure leading to collapse of either the whole of the structure or building, or significant members and/or their connections, expressed as 1 in ... (e.g. 1 in 1,000 meaning a probability of 1 in 1,000 that the failure could occur).

Maximum retained water level: The point where surface water will start to overflow out of the shower area.

Medium Hazard: Any condition, device or practice which, in connection with a water supply, has the potential to injure or endanger health.

Members: The parts of a structure or component that provide resistance to structural actions.

Members and connections that do not provide primary building support: Those components of a building or other structure that are not necessary to resist collapse of other members, parts of the building or the whole building, including but are not limited to—

- (a) non-loadbearing walls including framing, wall cladding, roof cladding, roof purlins and battens, mezzanine floors; and
- (b) connections and fixings that fix in position only those members that do not provide primary building support.

Members and connections that provide primary building support: Those components of a building or other structure that provide the structural system resisting collapse of other members, parts of the building or the whole building under the design actions, including but are not limited to—

- (a) beams, columns, trusses, portal frames, posts, loadbearing walls, floor systems, footings, foundations and earth retaining structures; and

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- (b) connections and fixings that transfer loads between members that provide primary building support.

Membrane: A barrier impervious to moisture.

Explanatory Information:

A barrier may be a single or multi-part system.

Mezzanine: An intermediate floor within a room.

Minimum Acceptable Annual Structural Reliability Index of Structures, Buildings, Members and Connections: The Structural Reliability Index (β), determined in accordance with the ABCB Structural Reliability Handbook (Version 2022.1) that corresponds to the maximum acceptable annual probability of structural failure tabulated in Table B1P1.

Minimum Energy Performance Standards (MEPS): The Minimum Energy Performance Standards for equipment and appliances established through the Greenhouse and Energy Minimum Standards Act 2012.

Mixed construction: A building consisting of more than one form of construction, particularly in double-storey buildings.

Mould: A fungal growth that can be produced from conditions such as dampness, darkness, or poor ventilation.

Multiple resistance paths: Situations where the failure of a part of a building or structure is resisted collectively by more than one member or connection, such that the failure of any member or connection will result in the transfer of loads to the other members and connections with sufficient combined capacity to resist the total applied loads.

NABERS Energy for Apartment Buildings: The National Australian Built Environment Rating System for apartment building energy efficiency, which is managed by the New South Wales Government.

NABERS Energy for Hotels: The National Australian Built Environment Rating System for hotel building energy efficiency, which is managed by the New South Wales Government.

NABERS Energy for Offices: The National Australian Built Environment Rating Systems for office energy efficiency, which is managed by the New South Wales Government.

NABERS Energy for Shopping Centres: The National Australian Built Environment Rating System for shopping centre energy efficiency, which is managed by the New South Wales Government.

TAS Network Utility Operator

Network Utility Operator: A person who—

- (a) undertakes the piped distribution of *drinking water* or *non-drinking water* for supply; or
- (b) is the operator of a sewerage system or a stormwater *drainage* system.

Explanatory Information:

A Network Utility Operator in most States and Territories is the water and sewerage authority licensed to supply water and receive sewage and/or stormwater. The authority operates or proposes to operate a network that undertakes the distribution of water for supply and undertakes to receive sewage and/or stormwater drainage. This authority may be a licensed utility, local government body or council.

- (a) Applied to a material — means not deemed *combustible* as determined by AS 1530.1 — Combustibility Tests for Materials.
- (b) Applied to construction or part of a building — means constructed wholly of materials that are not deemed *combustible*.

Non-drinking water: Water which is not intended primarily for human consumption, but which may have other uses.
~~drinking water.~~

Non-transient actions: The combination of structural actions in which the combined magnitude of the permanent gravity action and imposed gravity action is equal to or greater than 50% of the magnitude of the total combined actions.

- (a) For the purposes of Volume One, the features, needs and profile of the occupants in a *habitable room* or space.
- (b) For the purposes of Volume Two, the features, needs and profile of the occupants in a room or space.

Explanatory Information:

For the purpose of Volume Two, this term is used to describe the characteristics of the occupants and their associated requirements in relation to a room or space.

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For example, in relation to a bedroom, the following occupant characteristics and associated requirements should be considered:

- Characteristics: height, mobility and how often the space will be used.
- Requirements: a sleeping space and a space to undertake leisure activities.

Occupiable outdoor area: A space on a roof, balcony or similar part of a building—

- (a) that is open to the sky; and
- (b) to which access is provided, other than access only for maintenance; and
- (c) that is not *open space* or directly connected with *open space*.

TAS On-site wastewater management system

On-site wastewater management system: A system ~~installed on premises that~~ that receives and/or treats wastewater generated and discharges on the premises and applies the resulting effluent to an *approved disposal system* or re-use system.

Open-deck carpark: A carpark in which all parts of the parking *storeys* are cross-ventilated by permanent unobstructed openings in not fewer than 2 opposite or approximately opposite sides, and—

- (a) each side that provides ventilation is not less than $\frac{1}{6}$ of the area of any other side; and
- (b) the openings are not less than $\frac{1}{2}$ of the wall area of the side concerned.

Open space: A space on the allotment, or a roof or similar part of a building adequately protected from fire, open to the sky and connected directly with a public road.

Open spectator stand: A tiered stand substantially open at the front.

Other property: All or any of the following—

- (a) any building on the same or an adjoining allotment; and
- (b) any adjoining allotment; and
- (c) a road.

Outdoor air: Air outside the building.

Outdoor air economy cycle: A mode of operation of an *air-conditioning* system that, when the *outdoor air* thermodynamic properties are favourable, increases the quantity of *outdoor air* used to condition the space.

Outfall: That part of the disposal system receiving *surface water* from the drainage system and may include a natural water course, kerb and channel, or soakage system.

Overflow devices: A device that provides relief to a water service, sanitary *plumbing* and *drainage* system, *rainwater service harvesting system* or stormwater system to avoid the likelihood of *uncontrolled discharge*.

Panel wall: A non-*loadbearing external wall*, in frame or similar construction, that is wholly supported at each *storey*.

Partially buried rainwater tank: A rainwater tank that is not completely covered by earth but is partially set into the ground.

Patient care area: A part of a *health-care building* normally used for the treatment, care, accommodation, recreation, dining and holding of patients including a *ward area* and *treatment area*.

Performance-based design brief (PBDB): The ~~process and the associated~~ report that defines the scope of work for the performance-based analysis, the technical basis for analysis, and the criteria for acceptance of any relevant *Performance Solution* as agreed by stakeholders.

Performance Requirement: A requirement which states the level of performance which a *Performance Solution* or *Deemed-to-Satisfy Solution* must meet.

Performance Solution: A method of complying with the *Performance Requirements* other than by a *Deemed-to-Satisfy Solution*.

Perimeter of building: For the purposes of Section 8 of the Housing Provisions, means the external envelope of a building.

Personal care services: Any of the following:

- (a) The provision of nursing care.
- (b) Assistance or supervision in—
 - (i) bathing, showering or personal hygiene; or

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- (ii) toileting or continence management; or
- (iii) dressing or undressing; or
- (iv) consuming food.
- (c) The provision of direct physical assistance to a person with mobility problems.
- (d) The management of medication.
- (e) The provision of substantial rehabilitative or development assistance.

Piping: For the purposes of Section J in Volume One or Part H6 in Volume Two, and Section 13 of the Housing Provisions, means an assembly of pipes, with or without valves or other fittings, connected together for the conveyance of liquids and gases.

Pliable building membrane: A water barrier as classified by AS/NZS 4200.1.

Plumbing: Any water service plumbing ~~or, roof plumbing,~~ sanitary plumbing system ~~or heating, ventilation and air-conditioning plumbing.~~

Plumbing or Drainage Solution: A solution which complies with the *Performance Requirement* and is a—

- (a) *Performance Solution*; or
- (b) *Deemed-to-Satisfy Solution*; or
- (c) combination of (a) and (b).

Point of connection: Any of the following:

- (a) For a *heated water* service means the point where the water heater connects to the cold water service downstream of the isolation valve.
- (b) For sanitary plumbing means the point where the sanitary plumbing system connects to the sanitary drainage system.
- (c) For sanitary drainage ~~sewage disposal~~ means the point where the on-site sanitary drainage ~~drainage~~ system connects ~~to— to the Network Utility Operator's sewerage system or to an on-site wastewater management system.~~
 - (i) the Network Utility Operator' sewerage system; or
 - (ii) an on-site wastewater management system.
- (d) For stormwater disposal means the point where the on-site stormwater ~~drainage~~ system connects to ~~—the Network Utility Operator's stormwater system or to an approved disposal system.~~
 - (i) the Network Utility Operator' stormwater system; or
 - (ii) an approved on-site disposal system.
- (e) For a fire-fighting water service means the point where the service connects to—
 - (i) a cold water service, downstream of a backflow prevention device; or
 - (ii) the Network Utility Operator's water supply system; or
 - (iii) the point of isolation to an alternative water source.
- (f) For a cold water service means the point where the cold water service ~~connects to— pipe within the premises connects to the Network Utility Operator's property service or to an alternative water supply system.~~
 - (i) the Network Utility Operator's water supply system; or
 - (ii) the point of isolation to an alternative water source where there is no Network Utility Operator's water supply available or is not utilised.
- (g) For a rainwater service means the point where the rainwater service connects to the point of isolation to the rainwater storage.

Notes:

A domestic fire sprinkler service conforming to FPAA101D is considered part of the cold water service.

Explanatory Information:

The point of connection is usually determined by the Network Utility Operator according to the water and sewerage

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Acts, Regulations and codes that apply within the Network Utility Operator's licensed area and/or jurisdiction.

Point of discharge: The outlet of a—

- (a) tap or outlet that discharges water over plumbing fixtures; or
- (b) cistern inlet valve or flushing device of a sanitary fixture; or
- (c) water service used for the connection of an appliance which is readily accessible and easily connected or disconnected; or
- (d) tap, outlet or end of line valve where water is discharged to the atmosphere under normal operating conditions; or
- (e) isolating valve or the outlet provided for the connection of industrial or specialist equipment to the water service; or
- (f) backflow prevention device connected to a fire service or irrigation system; or
- (g) relief drain line or vent pipe from a water heater, temperature and pressure relief valve or expansion control valve.

Explanatory Information:

The point of discharge of a tap or fixture commonly includes the outlets of a basin or bath taps, shower heads, drinking fountains, flush valves or cistern inlet valves.

The point of discharge of a water service used for the connection of an appliance commonly includes outlets of an isolation valve provided for the connection of dishwashers, clothes washers, coffee machines and fridges with beverage dispensing and ice making capabilities.

The point of discharge for a tap discharging to atmosphere may include hose cocks. It does not include any subsequent connections to this outlet such as garden hoses.

Contamination control may be required to avoid contamination of the water service where a hazard exists beyond the point of discharge.

Water services downstream of the backflow prevention device are considered an unprotected water service.

Predicted Mean Vote (PMV): The Predicted Mean Vote of the thermal perception of building occupants determined in accordance with ANSI/ASHRAE Standard 55.

Preformed shower base: A preformed, prefinished vessel installed as the finished floor of a shower compartment, and which is provided with a connection point to a sanitary drainage system.

Explanatory Information:

Shower bases are commonly made of plastics, composite materials, vitreous enamelled pressed steel, or stainless steel.

Pressure vessel: A vessel subject to internal or external pressure, including interconnected parts and components, valves, gauges and other fittings up to the first point of connection to connecting piping, and—

- (a) includes fire heaters and gas cylinders; but
- (b) excludes—
 - (i) any vessel that falls within the definition of a *boiler*; and
 - (ii) storage tanks and equipment tanks intended for storing liquids where the pressure at the top of the tank is not exceeding 1.4 kPa above or 0.06 kPa below atmospheric pressure; and
 - (iii) domestic-type hot water supply heaters and tanks; and
 - (iv) pressure vessels installed for the purposes of fire suppression or which serve a fire suppression system.

QLD Primary building element

- (a) For the purposes of Volume One, a member of a building designed specifically to take part of the loads specified in B1D3 and includes roof, ceiling, floor, stairway or ramp and wall framing members including bracing members designed for the specific purpose of acting as a brace to those members.
- (b) For the purposes of Part 3.4 of the Housing Provisions, means a member of a building designed specifically to

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take part of the building loads and includes roof, ceiling, floor, stairway or ramp and wall framing members including bracing members designed for the specific purpose of acting as a brace to those members.

Explanatory Information:

The loads to which a building may be subjected are dead, live, wind, snow and earthquake loads. Further information on building loads can be found in the AS 1170 series of Standards.

Private bushfire shelter: A structure associated with, but not attached to, or part of a Class 1a dwelling that may, as a last resort, provide shelter for occupants from immediate life threatening effects of a bushfire.

- (a) For the purposes of Volume One—
 - (i) any garage associated with a Class 1 building; or
 - (ii) any single *storey* of a building of another Class containing not more than 3 vehicle spaces, if there is only one such *storey* in the building; or
 - (iii) any separate single *storey* garage associated with another building where such garage contains not more than 3 vehicle spaces.
- (b) For the purposes of Volume Two—
 - (i) any garage associated with a Class 1 building; or
 - (ii) any separate single *storey* garage associated with another building where such garage contains not more than 3 vehicle spaces.

Product: *Plumbing* and *drainage* items within the scope of Volume Three including but not limited to—

- (a) materials, fixtures and components used in a *plumbing* or *drainage* installation; and
- (b) appliances and equipment connected to a *plumbing* or *drainage* system.

Product Technical Statement: A form of documentary evidence stating that the properties and performance of a building material, product or form of construction fulfil specific requirements of the NCC, and describes—

- (a) the application and intended use of the building material, product or form of construction: and
- (b) how the use of the building material, product or form of construction complies with the requirements of the NCC Volume One and Volume Two; and
- (c) any limitations and conditions of the use of the building material, product or form of construction relevant to (b).

TAS Professional engineer

Professional engineer: A person who is—

- (a) if legislation is applicable — a registered professional engineer in the relevant discipline who has appropriate experience and competence in the relevant field; or
- (b) if legislation is not applicable—
 - (i) registered in the relevant discipline on the National Engineering Register (NER) of the Institution of Engineers Australia (which trades as 'Engineers Australia'); or
 - (ii) eligible to become registered on the Institution of Engineers Australia's NER and has appropriate experience and competence in the relevant field.

Public corridor: An enclosed corridor, hallway or the like which—

- (a) serves as a means of egress from 2 or more *sole-occupancy units* to a *required exit* from the *storey* concerned; or
- (b) is *required* to be provided as a means of egress from any part of a *storey* to a *required exit*.

Rainwater service harvesting system: A water service which distributes water from the isolation valve of the rainwater storage to the rainwater points of discharge for purposes such as for clothes washing, urinal and water closet flushing and external hose cocks. A plumbing installation that comprises—

A plumbing installation that comprises—

- (a) ~~any plumbing that connects a rainwater tank to any drinking water or non-drinking water outlets; and any top-up line that conveys drinking water from a Network Utility Operator's water supply to a rainwater tank.~~

Rainwater storage: Any storage of rainwater collected from a roof catchment area which is used to supply water for the

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primary purposes of drinking, personal hygiene or other uses.

Notes:

Generally this applies to water which is not supplied by a Network Utility Operator. This does not include rainwater storage for non-drinking purposes.

Rapid roller door: A door that opens and closes at a speed of not less than 0.5 m/s.

TAS Recognised expert

Recognised expert: A person with qualifications and experience in the area of *plumbing* or *drainage* in question recognised by the authority having jurisdiction.

Explanatory Information:

A recognised expert is a person recognised by the authority having jurisdiction as qualified to provide evidence under A5G4(5). Generally, this means a hydraulic consultant or engineer, however the specific requirements are determined by the authority having jurisdiction.

Under A5G4(5), a report from a recognised expert may be used as evidence of suitability that a *product* listed on the *WaterMark Schedule of Excluded Products*, or a *plumbing* or *drainage* system, complies with a *Performance Requirement* or *Deemed-to-Satisfy Provisions*.

- (a) For the purposes of Volume One, a hypothetical building that is used to calculate the maximum allowable *annual greenhouse gas emissions* and determine the *thermal comfort level* for the proposed building.
- (b) For the purposes of Volume Two, means a hypothetical building that is used to determine the maximum allowable *heating load* and *cooling load* for the proposed building.

Reflective insulation: A building membrane with a reflective surface such as a reflective foil laminate, reflective barrier, foil batt or the like capable of reducing radiant heat flow.

Explanatory Information:

For Volume Two:

- (a) Typical *R-Value* achieved by adding reflective insulation are given in the explanatory information accompanying Section 13 of the Housing Provisions. Information on specific products may be obtained from reflective insulation manufacturers.
- (b) The surface of reflective insulation may be described in terms of its emittance (or infra-red emittance) or in terms of its reflectance (or solar reflectance). Generally, for the surface of a particular reflective insulation –
- (c) emittance + reflectance = 1.
- (d) Some types of reflective insulation may also serve the purposes of waterproofing or vapour proofing.

Regulated energy: The energy consumed by a building's *services* minus the amount of *renewable energy* generated and used on *site*.

Reinforced masonry: Masonry reinforced with steel reinforcement that is placed in a bed joint or grouted into a core to strengthen the masonry.

Reliability: The probability that a system performs to a level consistent with the system specification.

Renewable energy: Energy that is derived from sources that are regenerated, replenished, or for all practical purposes cannot be depleted and the energy sources include, but are not limited to, solar, wind, hydroelectric, wave action and geothermal.

Reportable fire: A fire that would be reported to the fire brigade.

Required: Required to satisfy a *Performance Requirement* or a *Deemed-to-Satisfy Provision* of the NCC as appropriate.

Required safe egress time (RSET): The time required for safe evacuation of occupants to a place of safety prior to the onset of untenable conditions.

Residential aged care building: A Class 3 or 9a building whose residents, due to their incapacity associated with the ageing process, are provided with physical assistance in conducting their daily activities and to evacuate the building during an emergency.

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Residential care building: A Class 3, 9a or 9c building which is a place of residence where 10% or more of persons who reside there need physical assistance in conducting their daily activities and to evacuate the building during an emergency (including any *aged care building* or *residential aged care building*) but does not include a hospital.

Resident use area: Part of a Class 9c building normally used by residents, and—

- (a) includes *sole-occupancy units*, lounges, dining areas, activity rooms and the like; but
- (b) excludes offices, storage areas, commercial kitchens, commercial laundries and other spaces not for the use of residents.

Resistance to the incipient spread of fire: In relation to a ceiling membrane, means the ability of the membrane to insulate the space between the ceiling and roof, or ceiling and floor above, so as to limit the temperature rise of materials in this space to a level which will not permit the rapid and general spread of fire throughout the space.

Explanatory Information:

Resistance to the incipient spread of fire refers to the ability of a ceiling to prevent the spread of fire and thermally insulate the space between the ceiling and the roof or floor above. “Resistance to the incipient spread of fire” is superior to “fire-resistance” because it requires a higher standard of heat insulation.

The definition is used in Volume Two for separating floors/ceilings for a Class 1a dwelling located above a non-appurtenant *private garage*.

Rise in storeys: The greatest number of *storeys* calculated in accordance with C2D3 of Volume One.

Riser: The height between consecutive treads and between each *landing* and continuous tread.

Rolled fill: Material placed in layers and compacted by repeated rolling by an excavator.

Roof light: For the purposes of Section J and Part F4 in Volume One, Part H6 in Volume Two, and Part 10.5 and Section 13 of the Housing Provisions, a skylight, *window* or the like installed in a roof—

- (a) to permit natural light to enter the room below; and
- (b) at an angle between 0 and 70 degrees measured from the horizontal plane.

R-Value: The thermal resistance of a component calculated by dividing its thickness by its thermal conductivity, expressed in m².K/W.

Safe place: Either—

- (a) a place of safety within a building—
 - (i) which is not under threat from a fire; and
 - (ii) from which people must be able to safely disperse after escaping the effects of an emergency to a road or *open space*; or
- (b) a road or *open space*.

Sanitary compartment: A room or space containing a closet pan or urinal (see Figures 6a and 6b).

Figure 6a: Identification of a sanitary compartment (diagram a)

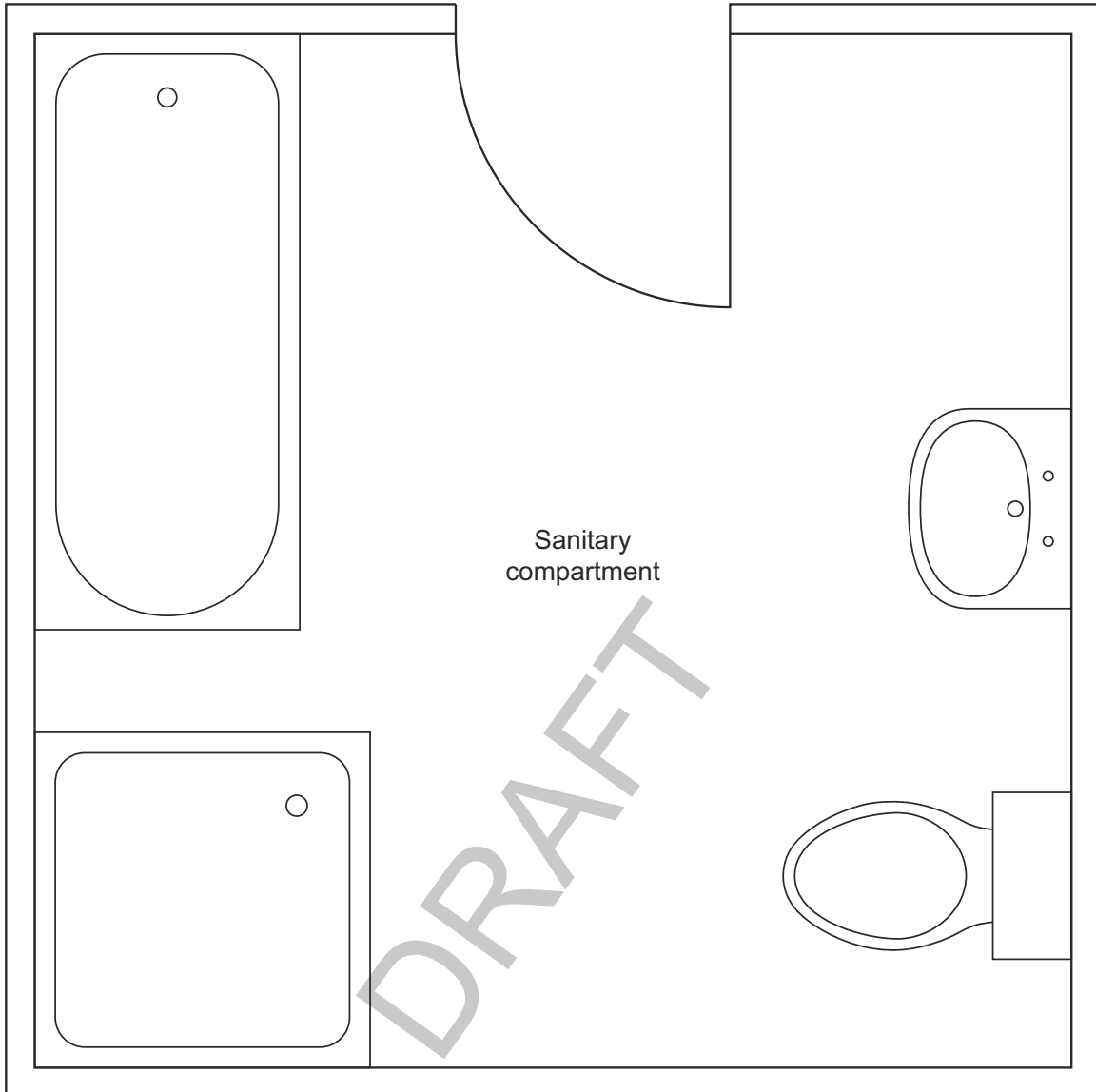
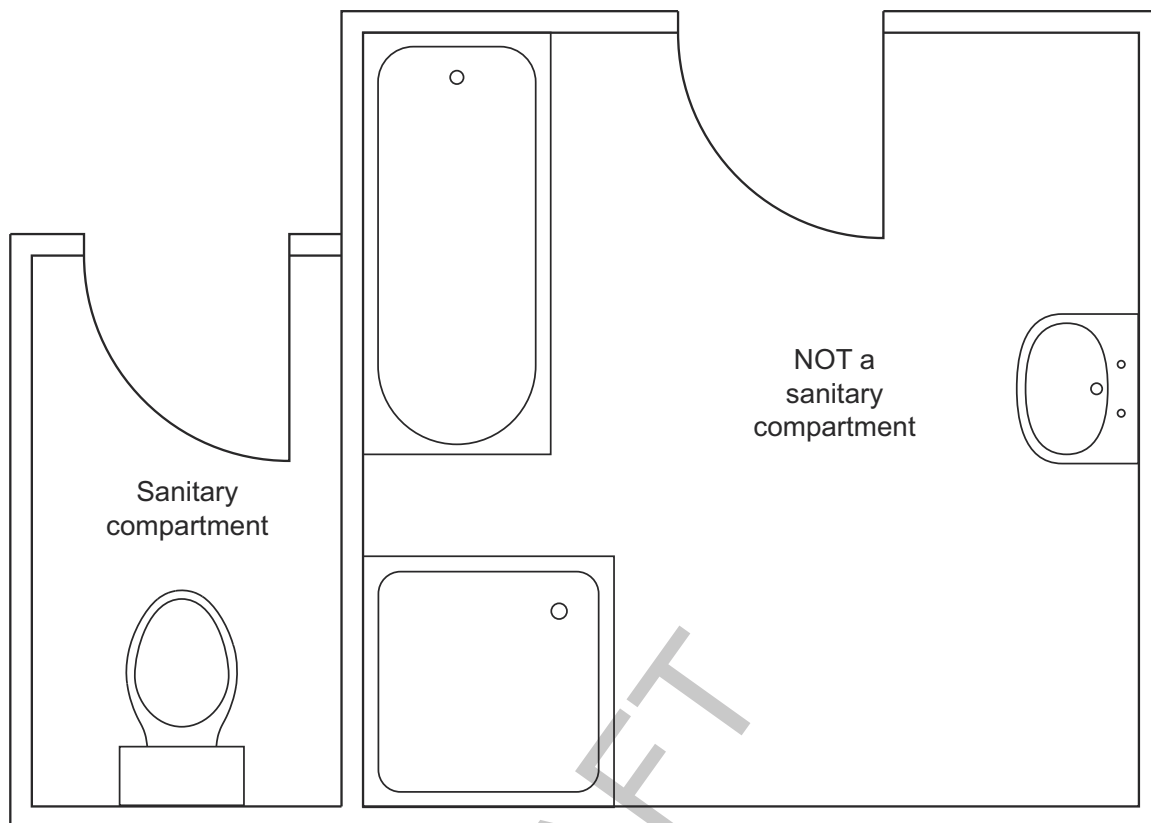


Figure 6b: Identification of a sanitary compartment (diagram b)



Sarking-type material: A material such as a *reflective insulation* or other flexible membrane of a type normally used for a purpose such as waterproofing, vapour management or thermal reflectance.

School: Includes a primary or secondary school, college, university or similar educational establishment.

Screed: A layer of material (usually cement based) of defined minimum thickness which sets in situ between a structural base and the finished floor material.

Self-closing: Is defined—

- (a) For the purposes of Volume One, applied to a door, means equipped with a device which returns the door to the fully closed position immediately after each opening.
- (b) For the purposes of Volume Two, applied to a door or *window*, means equipped with a device which returns the door or *window* to the fully closed and latched position immediately after each manual opening.

Self draining: Materials, systems or ballast that—

- (a) are above the structural substrate; and
- (b) have sufficient gaps or openings to permit drainage of rainwater to a membrane on the structural substrate below.

Sensible heat gain: The heat gained which causes a change in temperature.

Separating element: A barrier that exhibits fire *integrity*, *structural adequacy*, *insulation*, or a combination of these for a period of time under specified conditions (often in accordance with AS 1530.4).

Separating wall: A wall that is common to adjoining Class 1 buildings (see [Figure 7](#)).

Figure 7:

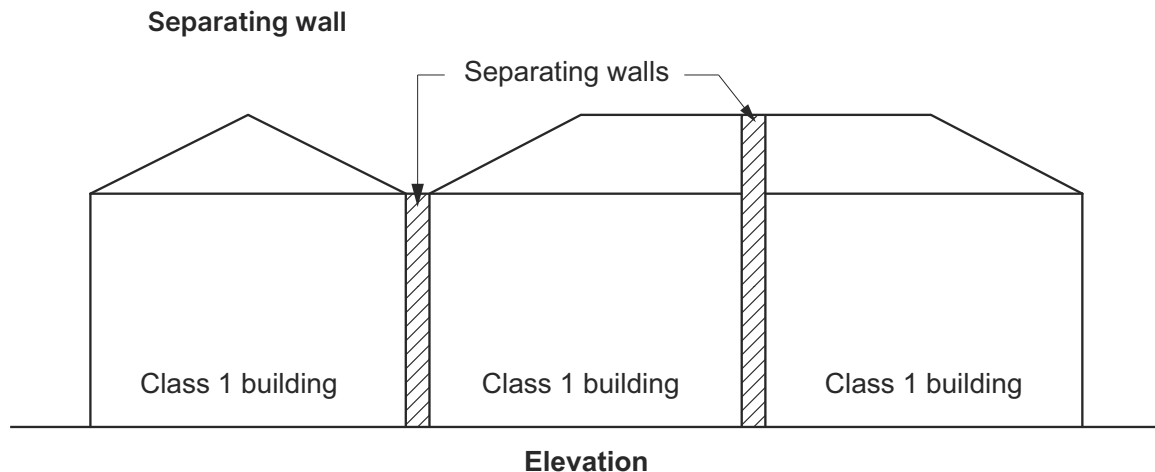


Figure Notes:

In Volume Two a separating wall may also be known as a party wall and typically is *required* to be *fire-resisting* construction (see Housing Provisions Parts and).

Service: For the purposes of Section J in Volume One, means a mechanical or electrical system that uses energy to provide *air-conditioning*, mechanical ventilation, heated water supply, artificial lighting, vertical transport and the like within a building, but which does not include—

- (a) systems used solely for emergency purposes; and
- (b) cooking facilities; and
- (c) portable appliances.

Service station: A garage which is not a *private garage* and is for the servicing of vehicles, other than only washing, cleaning or polishing.

Shaft: The walls and other parts of a building bounding—

- (a) a well, other than an *atrium well*; or
- (b) a vertical chute, duct or similar passage, but not a chimney or flue.

Shower area: ~~The area affected by water from a shower, including a shower over a bath.~~

- (a) Enclosed — The area enclosed by walls or screens including hinged or sliding doors that control the spread of water to within the enclosure but excludes—
 - (i) a shower fitted with a frameless or semi frameless *shower screen*, shower curtain or the like; and
 - (ii) a shower fitted over a bath with a screen less than 1500 mm long.
- (b) Unenclosed — The area where, under normal use, water out of the shower rose is not contained within 1500 mm of the shower rose.

Shower screen: The panels, doors or windows enclosing or partially enclosing a *shower area*.

Single leaf masonry: Outer walls constructed with a single thickness of masonry unit.

Single resistance paths: Situations where the failure of a part of a building or structure is resisted by only one member or connection, such that the failure of that member or connection will result in the collapse of a significant part of the building or structure.

Site: The part of the allotment of land on which a building stands or is to be erected.

Sitework: Work on or around a *site*, including earthworks, preparatory to or associated with the construction, *alteration*, demolition or removal of a building.

Small-scale Technology Certificate: A certificate issued under the Commonwealth Government's Small-scale Renewable Energy Scheme.

Small-sized, low-speed automatic lift: A restricted use power-operated device for the infrequent raising or lowering of people with limited mobility on a platform that is controlled automatically but has the capability of being electrically isolated by a key-lockable control.

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Smoke-and-heat vent: A vent, located in or near the roof for smoke and hot gases to escape if there is a fire in the building.

Smoke-Developed Index: The index number for smoke as determined by AS/NZS 1530.3.

Smoke development rate: The development rate for smoke as determined by testing flooring materials in accordance with AS ISO 9239.1.

Smoke growth rate index (SMOGR_{RC}): The index number for smoke used in the regulation of *fire hazard properties* and applied to materials used as a finish, surface, lining or attachment to a wall or ceiling.

Societal risk: Frequency and the number of people suffering from a specified level of harm in a given population from the realisation of specified hazards.

Solar admittance: The fraction of incident irradiance on a *wall-glazing construction* that adds heat to a building's space.

Sole-occupancy unit: A room or other part of a building for occupation by one or joint owner, lessee, tenant, or other occupier to the exclusion of any other owner, lessee, tenant, or other occupier and includes—

- (a) a dwelling; or
- (b) a room or suite of rooms in a Class 3 building which includes sleeping facilities; or
- (c) a room or suite of associated rooms in a Class 5, 6, 7, 8 or 9 building; or
- (d) a room or suite of associated rooms in a Class 9c building, which includes sleeping facilities and any area for the exclusive use of a resident.

Spandrel panel: For the purposes of Section J, means the opaque part of a façade in curtain wall construction which is commonly adjacent to, and integrated with, *glazing*.

Specialist equipment: Equipment used within hospitality or health care industries which is installed by specialist technicians.

Notes:

Examples may include medical equipment, commercial chemical or beverage dispensers, dental chairs or similar specialist equipment.

Spiral stairway: A stairway with a circular plan, winding around a central post with steps that radiate from a common centre or several radii (see [Figures 11.2.2d](#) and [11.2.2e](#) in the Housing Provisions).

Spread-of-Flame Index: The index number for spread of flame as determined by AS/NZS 1530.3.

Sprinkler alarm switch: For the purposes of [Specification 23](#), a device capable of sending an electrical signal to activate an alarm when a residential sprinkler head is activated (e.g. a flow switch).

Stage: A floor or platform in a Class 9b building on which performances are presented before an audience.

Stairway platform lift: A power-operated device for raising or lowering people with limited mobility on a platform (with or without a chair) in the direction of a stairway.

Standard Fire Test: The Fire-resistance Tests of Elements of Building Construction as described in AS 1530.4.

Storey: A space within a building which is situated between one floor level and the floor level next above, or if there is no floor above, the ceiling or roof above, but not—

- (a) a space that contains only—
 - (i) a lift *shaft*, stairway or meter room; or
 - (ii) a bathroom, shower room, laundry, water closet, or other *sanitary compartment*; or
 - (iii) accommodation intended for not more than 3 vehicles; or
 - (iv) a combination of the above; or
- (b) a *mezzanine*.

Structural adequacy: In relation to an FRL, means the ability to maintain stability and adequate *loadbearing* capacity as determined by AS 1530.4.

Structural member: A component or part of an assembly which provides vertical or lateral support to a building or structure.

Substantive parts of a building or structure: Those parts of a building or other structure that serve the purpose for which the building or structure has been constructed, including but are not limited to—

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- (a) the whole of a building or structure; and
- (b) any significant portion of a building or structure (such as habitable or non-habitable storey, a roof system, a floor system, a system of loadbearing walls and the like) which could result in loss of life or injury should it fail.

Sudden failure: Relatively rapid collapse of a structure that occurs with little warning with little plastic deformation and/or moment redistribution.

Surface water: All naturally occurring water, other than sub-surface water, which results from rainfall on or around the *site* or water flowing onto the *site*.

Swimming pool: Any excavation or structure containing water and principally used, or that is designed, manufactured or adapted to be principally used for swimming, wading, paddling, or the like, including a bathing or wading pool, or spa.

Tapered tread: A stair tread with a walking area that grows smaller towards one end.

Thermal comfort level: The level of thermal comfort in a building expressed as a *PMV* sensation scale.

Total R-Value: The sum of the *R-Values* of the individual component layers in a composite element including any building material, insulating material, airspace, thermal bridging and associated surface resistances, expressed in $m^2.K/W$.

- (a) For the purposes of Volume One, the fraction of incident irradiance on a *wall-glazing construction* or a *roof light* that adds heat to a building's space.
- (b) For the purposes of Volume Two, the fraction of incident irradiance on *glazing* or a *roof light* that adds heat to a building's space.
- (a) For the purposes of Volume One, the thermal transmittance of the composite element allowing for the effect of any airspaces, thermal bridging and associated surface resistances, expressed in $W/m^2.K$.
- (b) For the purposes of Volume Two, means the thermal transmittance of the composite element allowing for the effect of any airspaces and associated surface resistances, expressed in $W/m^2.K$.

Transient actions: The combination of structural actions in which the combined magnitude of the permanent gravity action and imposed gravity action is less than 50% of the magnitude of the total combined actions.

Treatment area: An area within a *patient care area* such as an operating theatre and rooms used for recovery, minor procedures, resuscitation, intensive care and coronary care from which a patient may not be readily moved.

Uncontrolled discharge: Any unintentional release of fluid from a *plumbing* and *drainage* system and includes leakage and seepage.

Unique wall: For the purposes of F1V1 in Volume One and H2V1 in Volume Two, a wall which is neither a *cavity wall* nor a *direct fix cladding wall*.

Unobstructed opening: For the purposes of Section 8 of the Housing Provisions, a glazed area that a person could mistake for an open doorway or clearway and walk into the glazed panel.

Unreinforced masonry: Masonry that is not reinforced.

Vapour pressure: The pressure at which water vapour is in thermodynamic equilibrium with its condensed state.

Ventilation opening: An opening in the *external wall*, floor or roof of a building designed to allow air movement into or out of the building by natural means including a permanent opening, an openable part of a *window*, a door or other device which can be held open.

Verification Method: A test, inspection, calculation or other method that determines whether a *Performance Solution* complies with the relevant *Performance Requirements*.

Vessel: For the purposes of Volume One and Part 10.2 of the Housing Provisions, an open, pre-formed, pre-finished concave receptacle capable of holding water, usually for the purpose of washing, including a basin, sink, bath, laundry tub and the like.

Visibility: The maximum distance at which an object of defined size, brightness and contrast can be seen and recognised.

Voltage: A difference of potential, measured in Volts (V) and includes *extra-low voltage* and *low voltage*.

- (a) In relation to a building — the volume of the total space of the building measured above the lowest floor (including, for a suspended floor, any subfloor space), over the enclosing walls, and to the underside of the roof covering.
- (b) In relation to a fire compartment — the volume of the total space of the fire compartment measured within the inner finished surfaces of the enclosing fire-resisting walls and/or floors, and—
 - (i) if there is no fire-resisting floor at the base of the fire compartment, measured above the finished surface of the lowest floor in the fire compartment; and
 - (ii) if there is no fire-resisting floor at the top of the fire compartment, measured to the underside of the roof

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covering of the fire compartment; and

(iii) if there is no fire-resisting wall, measured over the enclosing wall and if there is no enclosing wall, includes any space within the fire compartment that has a use which contributes to the fire load.

(c) In relation to an atrium — the volume of the total space of the atrium measured within the finished surfaces of the bounding construction and if no bounding construction, within the external walls.

Waffle raft: A stiffened raft with closely spaced ribs constructed on the ground and with slab panels supported between ribs.

Wall-glazing construction: For the purposes of Section J in Volume One, the combination of wall and glazing components comprising the envelope of a building, excluding—

(a) display glazing; and

(b) opaque non-glazed openings such as doors, vents, penetrations and shutters.

Ward area: That part of a patient care area for resident patients and may contain areas for accommodation, sleeping, associated living and nursing facilities.

Water control layer: A pliable building membrane or the exterior cladding when no pliable building membrane is present.

WaterMark Certification Scheme: The ABCB scheme for certifying and authorising plumbing and drainage products.

WaterMark Conformity Assessment Body (WMCAB): A conformity assessment body registered with and accredited by the JAS-ANZ to conduct evaluations leading to product certification and contracted with the administering body to issue the WaterMark Licence.

WaterMark Licence: A licence issued by a WaterMark Conformity Assessment Body.

WaterMark Schedule of Excluded Products: The list maintained by the administering body of products excluded from the WaterMark Certification Scheme.

WaterMark Schedule of Products: The list maintained by the administering body of products included in the WaterMark Certification Scheme, and the specifications to which the products can be certified.

Explanatory Information:

The WaterMark Schedule of Products and the WaterMark Schedule of Excluded Products can be viewed on the ABCB website at www.abcb.gov.au.

Waterproof: The property of a material that does not allow moisture to penetrate through it.

Waterproofing system: A combination of elements that are required to achieve a waterproof barrier as required by H4D2 and H4D3 including substrate, membrane, bond breakers, sealants, finishes and the like.

Water resistant: The property of a system or material that restricts moisture movement and will not degrade under conditions of moisture.

Water sensitive materials: Materials that have an inherent capacity to absorb water vapour and include timber, plasterboard, plywood, oriented strand board and the like.

Waterstop: A vertical extension of the waterproofing system forming a barrier to prevent the passage of moisture in the floor.

Watertight: Will not allow water to pass from the inside to the outside of the component or joint and vice versa.

Weighted average: Is calculated across the wetted surface area of a pipe, pipe fitting or plumbing fixture.

Wet area: An area within a building supplied with water from a water supply system, which includes bathrooms, showers, laundries and sanitary compartments and excludes kitchens, bar areas, kitchenettes or domestic food and beverage preparation areas.

Wetted surface area: Is calculated by the total sum of diameter (D) in contact with drinking water.

Winders: Treads within a straight flight that are used to change direction of the stair (see Figure 4).

Window: includes a roof light, glass panel, glass block or brick, glass louvre, glazed sash, glazed door, or other device which transmits natural light directly from outside a building to the room concerned when in the closed position.

Withstand: For the purposes of A8G3(1) means that in response to an imposed fire action the following conditions must not occur:

(a) Fire spread more than 5m above an opening in the façade through which flames are venting.

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- (b) Fire spread more than 2m beyond the extent of flames from a burning item adjacent to the structure such as a vehicle, waste bin, collection of combustible rubbish depending on the use and access to adjacent areas.
- (c) Ignition and propagation as the result of the imposed heat flux from a fire in an adjacent building or potential building on an adjoining allotment (embers are likely to be present and therefore piloted ignition should be considered if combustible materials are present).
- (d) Ignition and fire propagation within cladding materials and building cavities.
- (e) Release of flaming droplets.
- (f) Release of significant quantities of debris (criteria should be developed during the PBDB process having regard for the proximity of other property and the requirements of the emergency services).
- (g) Structural failure.

Explanatory Information:

For item (f), the risk to life of occupants evacuating the building from falling debris should be evaluated under A8G2.

Yield: The mass of a combustion product generated during combustion divided by the mass loss of the test specimen as specified in the *design fire*.

Zone protection: The installation of a *backflow prevention device* at the point where a water service is connected to multiple fixtures or appliances, with no *backflow prevention device* installed as *individual protection* downstream of this point.

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Schedule 2 Referenced documents

Referenced documents

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Referenced documents

The Standards and other documents listed in this Schedule are referenced in the NCC.

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Table 1: Schedule of referenced documents

No.	Date	Title	Volume One	Volume Two	Housing Provisions	Volume Three
AS/NZS ISO 717 Part 1	2004	Acoustics — Rating of sound insulation in buildings and of building elements — Airborne sound insulation (See Note 1)	F57V1, F57V2, F57V3, F57V4, F57D3	H4V4	10.7.2	N/A
AS/NZS ISO 717 Part 2	2004	Acoustics — Rating of sound insulation in buildings and of building elements — Impact sound insulation	F57V1, F57V3, F57D4	N/A	N/A	N/A
AS 1056 Part 1	1991	Storage water heaters — General requirements (incorporating amendments 1, 2, 3, 4 and 5)	N/A	N/A	N/A	B2D2
AS/NZS 1170 Part 0	2002	Structural design actions — General principles (incorporating amendments 1, 3 and 4)	B1V1, B1D2, Spec 4	H1V1, H2D6	2.2.2	N/A
AS/NZS 1170 Part 1	2002	Structural design actions — Permanent, imposed and other actions (incorporating amendments 1 and 2)	B1D3	N/A	2.2.3, 2.2.4, 8.3.1, 11.2.2, 11.2.3, 11.3, 11.3.3	N/A
AS/NZS 1170 Part 2	2011	Structural design actions — Wind actions (incorporating amendments 1, 2, 3, 4 and 5)	B1D3, B1D4, Spec 4, F43V1, Schedule 2	H4V4, H2D6 Schedule 2	2.2.3, Schedule 2	Schedule 2
AS/NZS 1170 Part 3	2003	Structural design actions — Snow and ice actions (incorporating amendments 1 and 2)	B1D3, Schedule 2	N/A	2.2.3, Schedule 2	Schedule 2
AS 1170 Part 4	2007	Structural design actions — Earthquake actions in Australia (incorporating amendments 1 and 2)	B1D3	H1D4, H1D5, H1D6, H1D9	2.2.3	N/A
AS 1191	2002	Acoustics — Method for laboratory measurement of airborne sound transmission insulation of building elements	Spec 29	N/A	N/A	N/A
AS 1273	1991	Unplasticized PVC (UPVC) downpipe and fittings for rainwater	N/A	N/A	7.4.2	N/A
AS 1288	2006	Glass in buildings — Selection and installation (incorporating amendments 1, 2 and 3)	B1D4, Spec 11, Spec 12	H1D8, H2D7	8.2.1	N/A
AS 1289.6.3.3	1997	Methods of testing soils for engineering purposes — Method 6.3.3: Soil strength and consolidation tests — Determination of the penetration resistance of a soil — Perth	N/A	N/A	4.2.4	N/A

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AS 1397	2011	Continuous hot-dip metallic coated steel sheet and strip — Coatings of zinc and zinc alloyed with aluminium and magnesium (incorporating amendment 1)	N/A	N/A	7.2.2	N/A
AS 1428 Part 1	2009	Design for access and mobility — General requirements for access — New building work (incorporating amendments 1 and 2)	D3D11, D3D16, D3D22, D4D2, D4D3, D4D4, D4D7, D4D10, D4D11, D4D13, Spec 16, E3D10, F24D5, G4D5, Schedule 2	Schedule 2	Schedule 2	Schedule 2, E1D2
AS 1428 Part 1	2001	Design for access and mobility — General requirements for access — New building work	I2D6, I2D8, I2D10, I2D15	N/A	N/A	E1D2
AS 1428 Part 1 (Supplement 1)	1993	Design for access and mobility — General requirements for access — Buildings — Commentary	I2D2	N/A	N/A	N/A
AS 1428 Part 2	1992	Design for access and mobility — Enhanced and additional requirements — Buildings and facilities	I2D2, I2D3, I2D4, I2D5, I2D7, I2D10, I2D11, I2D12, I2D13, I2D14	N/A	N/A	E1D2
AS 1428 Part 4	1992	Design for access and mobility — Tactile ground surface indicators for the orientation of people with vision impairment	I2D11	N/A	N/A	N/A
AS/NZS 1428 Part 4.1	2009	Design for access and mobility — Means to assist the orientation of people with vision impairment — Tactile ground surface indicators (incorporating amendments 1 and 2)	D4D9	N/A	N/A	N/A
AS 1530 Part 1	1994	Methods for fire tests on building materials, components and structures — Combustibility test for materials (See Note 2)	Schedule 2	Schedule 2	Schedule 2	Schedule 2
AS 1530 Part 2	1993	Methods for fire tests on building materials, components and structures — Test for flammability of materials (incorporating amendment 1) (See Note 2)	Schedule 2	Schedule 2	Schedule 2	Schedule 2
AS/NZS 1530 Part	1999	Methods for fire tests on building materials,	Schedule 2, Spec	Schedule 2, Spec	Schedule 2, Spec 3	Schedule 2,

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AS 1530 Part 4	2014	Methods for fire tests on building materials, components and structures — Fire resistance tests for elements of construction (See Note 2)	A5G7, C4D15, C4D16, Spec 9, Spec 10, Spec 13, Spec 14, Schedule 2, Spec 3	A5G7, Schedule 2, Spec 3	A5G7, Schedule 2, Spec 3	A5G7, Schedule 2, Spec 3
AS 1530 Part 8.1	2018	Methods for fire tests on building materials, components and structures, Part 8.1: Tests on elements of construction for buildings exposed to simulated bushfire attack — Radiant heat and small flaming sources	Spec 43			
AS 1562 Part 1	2018	Design and installation of sheet roof and wall cladding — Metal (See Note 3)	B1D4, F43D24	H2D6	N/A	N/A
AS/NZS 1562 Part 2	1999	Design and installation of sheet roof and wall cladding — Corrugated fibre-reinforced cement	F43D24	N/A	N/A	N/A
AS/NZS 1562 Part 3	1996 2006	Design and installation of sheet roof and wall cladding — Plastic	B1D4, F1D4 F3D2	H2D6 H1D7	N/A	N/A
AS 1657	2018	Fixed platforms, walkways, stairways and ladders — Design, construction and installation	D2D21, D2D22, D3D23, I1D6, I3D5	N/A	N/A	N/A
AS/NZS 1664 Part 1	1997	Aluminium structures — Limit state design (incorporating amendment 1)	B1D4	N/A	2.2.4	N/A
AS/NZS 1664 Part 2	1997	Aluminium structures — Allowable stress design (incorporating amendment 1)	B1D4	N/A	2.2.4	N/A
AS 1668 Part 1	2015	The use of ventilation and air conditioning in buildings — Fire and smoke control in buildings (incorporating amendment 1)	C3D13, C4D15, Spec 11, D2D12, Spec 19, E2D3, E2D4, F46D12 , Spec 21, Spec 31	N/A	N/A	N/A
AS 1668 Part 2	2012	The use of ventilation and air conditioning in buildings — Mechanical ventilation in buildings (incorporating amendments 1 and 2)	E2D4, F46V1 , F46D6 , F46D11 , F46D12 , J5D4	H4V3	9.5.5	N/A
AS 1668 Part 4	2012	The use of ventilation and air conditioning in buildings — Natural ventilation of buildings	F46D11	N/A	N/A	N/A
AS 1670 Part 1	2018	Fire detection, warning, control and intercom	C4D6, C4D7,	N/A	9.5.1, 9.5.5	N/A

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AS 1670 Part 3	2018	Fire detection, warning, control and intercom systems — System design, installation and commissioning — Fire alarm monitoring (See Note 4)	Spec 20, Spec 23	N/A	N/A	N/A
AS 1670 Part 4	2018	Fire detection, warning, control and intercom systems — System design, installation and commissioning — Emergency warning and intercom systems (See Note 4)	E3V2, E4D9, Spec 31	N/A	N/A	N/A
AS/NZS 1680 Part 0	2009	Interior lighting — Safe movement	F46D4	N/A	10.5.2	N/A
AS 1684 Part 2	2010	Residential timber framed construction — Non-cyclonic areas (incorporating amendments 1 and 2)	B1D4, B1D5, F1D10	H1D6,	2.2.5, 4.2.13, 4.5.7, 6.2.1, 6.3.6, 7.5.2, 7.5.3, 7.5.5	N/A
AS 1684 Part 3	2010	Residential timber framed construction — Cyclonic areas (incorporating amendment 1)	B1D4, B1D5, F1D10	H1D6	2.2.5, 4.2.13, 4.5.7, 6.2.1, 6.3.6, 7.5.2, 7.5.3, 7.5.5	N/A
AS 1684 Part 4	2010	Residential timber framed construction — Simplified — Noncyclonic areas (incorporating amendment 1)	B1D4, B1D5, F1D10	H1D6	2.2.5, 4.2.13, 4.5.7, 6.2.1, 7.5.2, 7.5.3, 7.5.5	N/A
AS 1720 Part 1	2010	Timber structures — Design methods (incorporating amendments 1, 2 and 3)	B1V1, B1D4	H2V2, H1D6	5.3.3	N/A
AS/NZS 1720 Part 4	2006 2019	Timber structures — Fire resistance for structural adequacy of timber members	Spec 1	Spec 2 <u>1</u>	Spec-2	Spec 2 <u>1</u>
AS 1720 Part 5	2015	Timber structures — Nailplated timber roof trusses (incorporating amendment 1)	B1D4	H1D6	N/A	N/A
AS 1735 Part 11	1986	Lifts, escalators and moving walks — Fire rated landing doors	C4D11	N/A	N/A	N/A
AS 1735 Part 12	1999	Lifts, escalators and moving walks — Facilities for persons with disabilities (incorporating amendment 1)	E3D7, I2D6	N/A	N/A	N/A
AS/NZS 1859 Part 4	2018	Reconstituted wood based panels — Specifications — Wet process fibreboard See Note 5	N/A	N/A	7.5.3, 7.5.4	N/A
AS 1860 Part 2	2006	Particleboard flooring — Installation (incorporating amendment 1)	B1D4	H1D6	N/A	N/A
AS 1905 Part 1	2015	Components for the protection of openings in fire-resistant walls — Fire-resistant	C4D7, Spec 12	N/A	N/A	N/A

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AS 1905 Part 2	2005	Components for the protection of openings in fire-resistant walls — Fire-resistant roller shutters	Spec 12	N/A	N/A	N/A
AS 1926 Part 1	2012	Swimming pool safety — Safety barriers for swimming pools	G1D2, G1D4	H7D2	N/A	N/A
AS 1926 Part 2	2007	Swimming pool safety — Location of safety barriers for swimming pools (incorporating amendments 1 and 2)	G1D2	H7D2	N/A	N/A
AS 1926 Part 3	2010	Swimming pool safety — Water recirculation systems (incorporating amendment 1)	G1D2	H7D2	N/A	N/A
AS 2047	2014	Windows and external glazed doors in buildings (incorporating amendments 1 and 2) See Note 6	B1D4, F43V1, F43D44, J4D5	H2V2, H1D8, H2D7	8.2.1, 13.4.4	N/A
AS 2049	2002	Roof tiles (incorporating amendment 1)	F43D24	H1D7	N/A	N/A
AS 2050	2018	Installation of roof tiles	B1D4, F43D24	H2D6	7.3.2	N/A
AS 2118 Part 1	2017	Automatic fire sprinkler systems — General systems (incorporating amendments 1 and 2)	C1V3, E1D2, Spec 17, Spec 18	N/A	N/A	N/A
AS 2118 Part 4	2012	Automatic fire sprinkler systems — Sprinkler protection for accommodation buildings not exceeding four storeys in height	E1D2, Spec 17, Spec 18	N/A	N/A	N/A
AS 2118 Part 6	2012	Automatic fire sprinkler systems — Combined sprinkler and hydrant systems in multistorey buildings	E1D2, Spec 17	N/A	N/A	N/A
AS 2159	2009	Piling — Design and installation (incorporating amendment 1)	B1D4	H1D4, H2D3	N/A	N/A
AS/NZS 2179 Part 1	2014	Specifications for rainwater goods, accessories and fasteners — Metal shape or sheet rainwater goods, and metal accessories and fasteners	N/A	N/A	7.4.2	N/A
AS/NZS 2269 Part 0	2012	Plywood — Structural — Specifications (incorporating amendment 1)	N/A	N/A	7.5.4	N/A
AS/NZS 2293 Part 1	2018	Emergency lighting and exit signs for buildings — System design, installation and operation	E4D4, E4D8, Spec 25, I3D15	N/A	N/A	N/A
AS/NZS 2327	2017	Composite structures — Composite steel-concrete construction in buildings	B1D4, Spec 1	Spec 21	2.2.4, Spec 2	Spec 21

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AS 2419 Part 1	2005	Fire hydrant installations — System design, installation and commissioning (incorporating amendment 1)	C3D13, E1D2, Spec 18, I3D9	N/A	N/A	N/A
AS 2441	2005	Installation of fire hose reels (incorporating amendment 1)	E1D3	N/A	N/A	N/A
AS 2444	2001	Portable fire extinguishers and fire blankets — Selection and location	E1D14, I3D11	N/A	N/A	N/A
AS 2665	2001	Smoke/heat venting systems — Design, installation and commissioning	Spec 22, Spec 31	N/A	N/A	N/A
AS/ NZS -2699 Part 1	2000 2020	Built-in components for masonry construction — Wall ties. See Note (I)(i)	C2D10	N/A	5.2.10 , 5.6.5	N/A
AS/ NZS -2699 Part 3	2002 2020	Built-in components for masonry construction — Lintels and shelf angles (durability requirements). See Note (I)(ii)	C2D10	N/A	5.2.12 , 5.6.7	N/A
AS 2870	2011	Residential slabs and footings	F1D9 8	H1D3, H1D4, H2D3,	3.3.4, 3.4.3, 4.2.2, 4.2.6, 4.2.8, 4.2.11, 4.2.14, 4.3.3, 4.4.1, 4.5, 4.5.3, 4.5.7, 10.2.10	N/A
AS/NZS 2890 Part 6	2009	Parking facilities — Offstreet parking for people with disabilities	D4D6	N/A	N/A	N/A
AS/NZS 2904	1995	Damp-proof courses and flashings (incorporating amendments 1 and 2)	F1D8 7	N/A	5.2.7, 5.7.3, 7.5.6, 12.3.3	N/A
AS/NZS 2908 Part 1	2000	Cellulose-cement products — Corrugated sheets	B1D4, F4 3 D24	N/A	N/A	N/A
AS/NZS 2908 Part 2	2000	Cellulose-cement products — Flat sheets	Schedule 2	Schedule 2	7.5.3, 7.5.4, 7.5.5, 10.2.10, 10.2.11, Schedule 2	Schedule 2
AS/NZS 2918	2018	Domestic solid fuel burning appliances — Installation See Note 11	G2D2	H7D5,	12.4.4, 12.4.5	N/A
AS/NZS 3013	2005	Electrical installations — Classification of the fire and mechanical performance of wiring system elements	C3D14	N/A	N/A	N/A
AS/NZS 3500 Part 0	2003	Plumbing and drainage — Glossary of terms	A1G1	A1G1	A1G1	A1G1
AS/NZS 3500 Part 1	2018	Plumbing and drainage — Water services	N/A	N/A	N/A	B1D4, B3D3, B4D2, B5D2,

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AS/NZS 3500 Part 2	2018	Plumbing and drainage — Sanitary plumbing and drainage	N/A	N/A	N/A	C1D3, C2V2, C2D3, C2D4
AS/NZS 3500 Part 3	2018	Plumbing and drainage — Stormwater drainage	F1D2	H1D3, H1D7	3.3.4, 7.4.3	N/A
AS/NZS 3500 Part 4	2018	Plumbing and drainage — Heated water services (incorporating amendment 1)	N/A	N/A	N/A	B2D2, B2D6, B2D7, B2D8, B2D9
AS/NZS 3600	2018	Concrete structures (incorporating amendment 1)	B1V1, B1D4, Spec 2	H1V1, H1D4, Spec 2	2.2.4, 3.4.3, 4.2.6, 4.2.10, 4.2.13, 4.3.2, 4.5.7, 5.3.3, 10.2.10, Spec 2	Spec 2
AS 3660 Part 1	2014	Termite management — New building work (incorporating amendment 1)	B1D4, F1D87	N/A	3.4.1, 3.4.2	N/A
AS 3660 Part 3	2014	Termite management — Assessment criteria for termite management systems	N/A	N/A	3.4.2	N/A
AS/NZS 3666 Part 1	2011	Air-handling and water systems of buildings — Microbial control — Design, installation and commissioning	F2D10, F46D6	N/A	N/A	N/A
AS 3700	2018	Masonry structures	B1D4, Spec 2	H1D5, H2D4,	5.2.4, 5.4.2, 5.6.3, 6.3.6, 10.2.10, 12.4.3, Spec 2	Spec 2
AS 3740	2010	Waterproofing of domestic wet areas (incorporating amendment 1)	F1D26	H4D3	10.2.9	N/A
AS 3786	2014	Smoke alarms using scattered light, transmitted light or ionization (incorporating amendment 1 and 2) See Note 7	Spec 20	N/A	9.5.1, 9.5.5	N/A
AS/NZS 3823 Part 1.2	2012	Performance of electrical appliances — Airconditioners and heat pumps — Ducted airconditioners and air-to-air heat pumps — Testing and rating for performance	Spec 33, J5D12	N/A	N/A	N/A
AS 3959	2018	Construction of buildings in bushfire-prone areas	G5D2, G5D3, Spec 44	H7D4	N/A	N/A
AS/NZS 4020	2018	Testing of products for use in contact with drinking water See Note 8	A5G4	A5G4	A5G4	A5G4, A5G7
AS 4055	2012	Wind loads for housing (incorporating amendment 1)	Schedule 2	H1D8, Schedule 2	Schedule 2	Schedule 2
AS 4072 Part 1	2005	Components for the protection of openings	C4D15, C4D16	N/A	9.3.2	N/A

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AS 4100	1998 2020	Steel structures (incorporating amendment 1)	B1D4, Spec 2 1	H1D6, Spec 2 1	4.2.13, 4.5.7, 5.2.12, 5.6.7, 12.3.2, Spec 2	Spec 2 1
AS/NZS 4200 Part 1	2017	Pliable building membranes and underlays — Materials	F 43 D 35 , F 68 D3, Spec 2	Spec 2	7.3.4, 7.5.2, 7.5.8, 10.8.1, Spec 2	Spec 2
AS 4200 Part 2	2017	Pliable building membranes and underlays — Installation requirements (incorporating amendment 1)	F1D5, F 68 D3	N/A	10.8.1	N/A
AS/NZS 4234	2008	Heated water systems — Calculation of energy consumption (incorporating amendments 1, 2 and 3)	N/A	N/A	N/A	B2V1, B2D2
AS 4254 Part 1	2012	Ductwork for airhandling systems in buildings — Flexible duct	Spec 7, J5D7	H3D2	13.6.4	N/A
AS 4254 Part 2	2012	Ductwork for airhandling systems in buildings — Rigid duct	Spec 7, J5D5, J5D7	N/A	13.6.4	N/A
AS/NZS 4256 Part 4	1994	Plastic roof and wall cladding materials — General requirements	F1D4	N/A	N/A	N/A
AS/NZS 4256 Part 2	1994	Plastic roof and wall cladding materials — Unplasticized polyvinyl chloride (uPVC) building sheets	F1D4	N/A	N/A	N/A
AS/NZS 4256 Part 3	1994	Plastic roof and wall cladding materials — Glass fibre reinforced polyester (GRP)	F1D4	N/A	N/A	N/A
AS/NZS 4256 Part 5	1996	Plastic roof and wall cladding materials — Polycarbonate	F1D4	N/A	N/A	N/A
AS/NZS 4284	2008	Testing of building facades	F 43 V1	H1V1	N/A	N/A
AS/NZS 4505	2012	Garage doors and other large access doors (incorporating amendment 1)	B1D4	N/A	2.2.4	N/A
AS 4552	2005	Gas fired water heaters for hot water supply and/or central heating	N/A	N/A	N/A	B2D2
AS 4586	2013	Slip resistance classification of new pedestrian surface materials (incorporating amendment 1) See Note 10	D3D11, D3D14, D3D15. Spec 27	N/A	11.2.4	N/A
AS 4597	1999	Installation of roof slates and shingles (Noninterlocking type)	B1D4, F 34 D 24	H2D6	N/A	N/A
AS/NZS 4600	2018	Cold-formed steel structures	B1D4, Spec 2	H1D6, Spec 2	5.3.3, 6.3.6, Spec 2	Spec 2
AS 4654 Part 1	2012	Waterproofing membranes for external above-ground use — Materials	F1D3	H2D8	N/A	N/A

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AS 4654 Part 2	2012	Waterproofing membranes for external above-ground use — Design and installation	F4D3	H2D8	N/A	N/A
AS 4678	2002	Earth-retaining structures	N/A	H1D3	N/A	N/A
AS 4773 Part 1	2015	Masonry in small buildings — Design (incorporating amendment 1)	N/A	H1D5, H2D4	5.2.4, 5.6.3, 12.4.3	N/A
AS 4773 Part 2	2015	Masonry in small buildings — Construction	N/A	H1D5, H2D4	5.2.4, 5.6.3, 12.4.3	N/A
AS/NZS 4859 Part 1	2018	Thermal insulation materials for buildings — General criteria and technical provisions	J3D3, J5D6, J5D9	N/A	13.2.2, 13.2.6, 13.6.2, 13.6.3, 13.6.4	N/A
AS/NZS 4859 Part 2	2018	Thermal insulation materials for buildings — Design	J3D3, Spec 37	N/A	N/A	N/A
AS 5113	2016	Classification of external walls of buildings based on reaction-to-fire performance (incorporating amendment 1)	C1V3	N/A	N/A	N/A
AS 5146 Part 1	2015	Reinforced autoclaved aerated concrete — Structures (incorporating amendment 1)	B1D4	H2D6	N/A	N/A
AS 5216	2018	Design of post-installed and cast-in fastenings in concrete	B1D4	N/A	2.2.4	N/A
AS 5637 Part 1	2015	Determination of fire hazard properties — Wall and ceiling linings	Spec 7, Schedule 2	Schedule 2	Schedule 2	Schedule 2
AS ISO 9239 Part 1	2003	Reaction to fire tests for floorings — Determination of the burning behaviour using a radiant heat source	Schedule 2	Schedule 2	Schedule 2	Schedule 2
AS/NZS ISO 9972	2015	Thermal performance of buildings — Determination of air permeability of buildings — Fan pressurization method	J1V4	H6V3	N/A	N/A
AIRAH-DA09	1998	Air conditioning load estimation	Spec 35	N/A	N/A	N/A
AIRAH-DA28	2011	Building management and control systems	Spec 34	N/A	N/A	N/A
ANSI/ASHRAE Standard 55	2013	Thermal environmental conditions for human occupancy	Schedule 2	Schedule 2	Schedule 2	Schedule 2
ANSI/ASHRAE Standard 140	2007	Standard method of test for the evaluation of building energy analysis computer programs	J1V1, J1V2, J1V3	H6V2	N/A	N/A
ASTM E2073-10	2010	Standard Test Method for Photopic Luminance of Photoluminescent (Phosphorescent) Markings	Spec 25	N/A	N/A	N/A
ASTM E72-15	2015	Standard Test Methods of Conducting Strength Tests of Panels for Building	Spec 6	N/A	N/A	N/A

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ASTM E695-03	2003	Standard Test Method of Measuring Relative Resistance of Wall, Floor and Roof Construction to Impact Loading	Spec 6	N/A	N/A	N/A
ASTM E903	2012	Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres	N/A	N/A	13.2.3	N/A
AHRI 460	2005	Performance rating of remote mechanical-draft air-cooled refrigerant condensers	J5D13	N/A	N/A	N/A
AHRI 551/591	2015	Performance rating of water-chilling and heat pump water-heating packages using the vapor compression cycle.	Spec 33, J5D11	N/A	N/A	N/A
ABCB	2011	Protocol for Structural Software, Version 2011.2	B1D5	H1D6	2.2.5	N/A
ABCB	2012	Standard for Construction of Buildings in Flood Hazard Areas, Version 2012.3	B1D6	H1D10	N/A	N/A
ABCB	2022	Fire Safety Verification Method	C1V4, D1V4, E1V1, E2V1, E3V1, E4V2			
ABCB	2019	Standard for NatHERS Heating and Cooling Load Limits, Version 2019.1	J2D3	H6D3	N/A	N/A
CIBSE Guide A	2015	Environmental design	Spec 34, Spec 35, J3D3, J3D7	N/A	N/A	N/A
Disability Standards for Accessible Public Transport	2002		F2D12, I2D1	N/A	N/A	N/A
Education and Care Services National Law Act (Vic)	2010		Schedule 2	Schedule 2	Schedule 2	Schedule 2
European Union Commission Regulation 547/2012	2012	Ecodesign requirements for water pumps	J5D8	N/A	N/A	N/A
European Union Commission Regulation 622/Annex II, point	2012	Eco-design requirements for glandless standalone circulators and glandless circulators integrated in products	J5D8	N/A	N/A	N/A

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FPAA101D	2018	Automatic Fire Sprinkler System Design and Installation — Drinking Water Supply	C1V3, C2D6, C3D14, C3D2, C3D7, C4D6, C4D7, C4D8, C4D9, C4D12, Spec 5, Spec 7, D2D4, D2D17, D3D26, D3D30, E1D2, Spec 17, Spec 18, E2D3, Spec 20, G3D1, G3D6, Spec 31, I1D2	N/A	N/A	B4D2
FPAA101H	2018	Automatic Fire Sprinkler System Design and Installation — Hydrant Water Supply	C1V3, C2D6, C3D14, C3D2, C3D7, C4D6, Spec 5, Spec 7, E1D2, Spec 17, Spec 18, E2D3, Spec 20, G3D1, G3D6, Spec 31, I1D2	N/A	N/A	B4D2
ISO 140 Part 6	1998E	Acoustics — Measurement of sound insulation in buildings and of building elements — Laboratory measurements of impact sound insulation of floors	Spec 29	N/A	N/A	N/A
ISO 540	2008	Hard coal and coke — Determination of ash fusibility	Spec 13	N/A	N/A	N/A
ISO 8336	1993E	Fibre-cement flat sheets	Schedule 2	Schedule 2	7.5.3, 7.5.4, 7.5.5, Schedule 2	Schedule 2
ISO 25745 Part 2	2015	Energy performance of lifts, escalators and moving walks: Energy calculation and classification for lifts (elevators)	J6D8	N/A	N/A	N/A
NASH Standard	2014	Steel Framed Construction in Bushfire Areas (incorporating amendment A)	N/A	H1D6	N/A	N/A
NASH Standard Part 1	2005	Residential and LowRise Steel Framing — Design Criteria (incorporating amendments A, B and C)	B1D4	H1D6	N/A	N/A
NASH Standard	2014	Residential and LowRise Steel Framing —	B1D4, B1D5,	H1D6	2.2.5, 6.2.1, 6.3.6,	N/A

No.	Date	Title	Volume One	Volume Two	Housing Provisions	Volume Three
N/A	N/A	Northern Territory Deemed to Comply Standards Manual	N/A	N/A	2.2.4	N/A
SA TS 5344	2019	Permanent labelling for Aluminium Composite Panel (ACP) products	A5G8	A5G8	A5G8	A5G8
TN 61		Cement Concrete and Aggregates Australia — Technical note — Articulated walling	N/A	H1D4	N/A	N/A

Table Notes:

1. For AS/NZS ISO 717.1:
 - (i) Test reports based on AS 1276—1979 and issued prior to AS/NZS 1276.1—1999 being referenced in the NCC remain valid.
 - (ii) The STC values in reports based on AS 1276—1979 shall be considered to be equivalent to R_w values.
 - (iii) Test reports based on AS/NZS 1276.1 prepared after the NCC reference date for AS/NZS 1276.1—1999 must be based on that version.
 - (iv) Test reports based on ISO 717-1—1996 and issued prior to AS/NZS ISO 717.1—2004 being referenced in the NCC remain valid.
 - (v) Reports based on AS/NZS ISO 717.1 relating to tests carried out after the NCC reference date for AS/NZS ISO 717.1—2004 must relate to the amended Standard.
2. For AS 1530 Parts 1 to 4:
 - (i) Until 1 May 2022, subject to the note to AS 4072.1, reports relating to tests carried out under earlier editions of AS 1530 Parts 1 to 4 remain valid.
 - (ii) Reports relating to tests carried out after the date of an amendment to a Standard must relate to the amended Standard.
3. For AS 1562.1, tests carried out based on AS 1562.1—1992 and issued prior to AS 1562.1—2018 being referenced in the NCC remain valid. Reports relating to tests carried out after the NCC reference date for AS 1562.1 must relate to the revised Standard.
4. For AS 1670.1, AS 1670.3 and AS 1670.4:
 - (i) Notwithstanding A4G1(5), until 1 May 2022 either the current edition or the previous editions of the documents listed in Table 1.8 of AS 1670.1, AS 1670.3 and AS 1670.4 may be used to meet the requirements of AS 1670.1, AS 1670.3 and AS 1670.4 as applicable.
 - (ii) From 1 May 2022 A4G1(5) applies and only the edition of the documents listed in Table 1.8 of AS 1670.1, AS 1670.3 and AS 1670.4 that existed at the time of publication of the primary document may be used.
 - (iii) For AS/NZS 1859.4, the 2004 edition has been retained for a transitional period ending on 30 April 2020.
5. For AS 2047:
 - (i) Tests carried out under earlier editions of AS 2047 remain valid.
 - (ii) Reports based on AS 2047 relating to tests carried out after the NCC reference date for AS 2047—2014 Amendment 2 must relate to the amended Standard.
6. For AS 3786:
 - (i) Tests carried out under AS 3786—2014 Amendment 1 remain valid.
 - (ii) Reports based on AS 3786 relating to tests carried out after the NCC reference date for AS 3786—2014 Amendment 2 must relate to the amended Standard.
7. Test reports based on the 2005 edition of AS/NZS 4020 will continue to be accepted until 1 May 2024. Test reports prepared after the NCC reference date for the

- 2018 edition of AS/NZS 4020 must be based on the 2018 edition.
8. For AS 4072.1, until 1 May 2022, systems tested to AS 1530.4 prior to 1 January 1995 need not be retested to comply with the provisions in AS 4072.1.
 9. For AS 4586:
 - (i) Test reports based on the 2004 edition of AS/NZS 4586 and issued prior to the 2013 edition of AS 4586 being referenced in the NCC remain valid.
 - (ii) Test reports prepared after the NCC reference date of the 2013 edition of AS 4586 must be based on that version.
 - (iii) For the purposes of assessing compliance, the slip-resistance classifications of V, W and X in reports based on the 2004 edition of AS/NZS 4586 may be considered to be equivalent to slip-resistance classifications of P5, P4 and P3 respectively in the 2013 edition of AS4586.
 - (iv) Test reports based on Appendix D of AS 4586—2013 and issued prior to the NCC reference date for AS 4586—2013 (incorporating Amendment 1) remain valid.
 - (v) Test reports based on Appendix D of AS 4586—2013 and prepared after the NCC reference date for AS 4586—2013 (incorporating Amendment 1) must be based on that version.
 10. Tests carried out based on AS/NZS 2918—2001 and issued prior to AS/NZS 2918—2018 being referenced in the BCA remain valid. Reports relating to tests carried out after the NCC reference date for AS/NZS 2918 must relate to the revised Standard.
 11. For AS 2699 Parts 1 and 3:
 - (i) For AS 2699.1, the 2000 edition has been retained for a transitional period ending on 30 April 2025.
 - (ii) For AS 2699.3, the 2002 edition has been retained for a transitional period ending on 30 April 2025.

Schedule 3 Commonwealth of Australia

Footnote: Other legislation affecting buildings

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Footnote: Other legislation affecting buildings

In addition to any applicable provisions of this Code, there are a number of other legislative technical requirements and policies affecting the design, construction and/or performance of buildings that practitioners may need to be aware of, including, but not necessarily limited to, the following list. Additional legislative instruments such as regulations, codes and standards may exist under the legislation listed.

1. Aged Care Buildings

Administering Agency

Department of Health

Relevant Legislation

Aged Care Act 1997

2. Australian Capital Territory

Administering Agency

Department of Finance, section 27 insofar as it relates to the declaration of land in the Australian Capital Territory to be National Land where the land is required for Commonwealth purposes other than for the special purposes of Canberra as the National Capital

Department of Infrastructure, Regional Development and Cities, except to the extent administered by the Minister for Finance

Relevant Legislation

National Capital Plan (established under the Australian Capital Territory (Planning and Land Management) Act 1988)

Administering Agency

Department of Infrastructure, Regional Development and Cities

Relevant Legislation

Parliament Act 1974

National Land Ordinance 1989

3. Indian Ocean Territories

Administering Agency

Department of Infrastructure, Regional Development and Cities

Relevant Legislation

Christmas Island Act 1958

Cocos (Keeling) Islands Act 1955

4. Communications and Information Technology

Administering Agency

Department of Communications and the Arts

Relevant Legislation

Australian Postal Corporation Act 1989

National Transmission Network Sale Act 1998

Telecommunications Act 1997

Telstra Corporation Act 1991

Telecommunications (Consumer Protection and Service Standards) Act 1999

Relevant Policy

Telecommunications Infrastructure in New Developments (TIND) policy

5. Defence Buildings

Administering Agency

Department of Defence

Relevant Legislation

Defence Act 1903

Relevant Regulations

Defence Regulation 2016, Part 11A

Relevant Codes, Standards and Publications

Manual of Fire Protection Engineering

Requirements for the Provision of Disabled Access and other Facilities for People with a disability in defence

Heating, Ventilation and Air Conditioning Policy

Microbial Control in Air Handling and Water Systems of Defence Buildings

Building Energy Performance Manual

Manual of Infrastructure Engineering - Electrical

Manual of Infrastructure Engineering - Bulk Fuel Installation Design

Defence Communications Cabling Standard

Defence Training Area Management Manual

Defence Safety Manual

Defence Security Manual

Defence Explosive Ordinance Publications

The defence Estate Quality Management System (<http://www.defence.gov.au/im/>) contains further requirements including the principles of development, zone planning, site selection, engineering requirements and environmental impact assessment and approval requirements.

6. Disability Discrimination

Administering Agency

Attorney-General's Department

Relevant Legislation

Disability (Access to Premises - Buildings) Standards 2010

Disability Discrimination Act 1992

Disability Standards for Accessible Public Transport 2002

7. Environment

Administering Agency

Department of the Environment and Energy

Relevant Legislation

Environmental Protection and Biodiversity Conservation Act 1999
Environment Protection and Biodiversity Conservation Regulations 2000

Relevant Policy

Energy Efficiency in Government Operations (2007)
Significant impact guidelines – matters of national environmental significance

8. Federal Airports

Administering Agency

Department of Infrastructure, Regional Development and Cities

Relevant Legislation

Airports Act 1996
Airports Regulations 1997
Airports (Building Control) Regulations 1996
Airports (Control of On-Airport Activities) Regulations 1997
Airports (Environmental Protection) Regulations 1997
Airports (Protection of Airspace) Regulations 1996

9. Jervis Bay Territory

Administering Agency

Department of Infrastructure, Regional Development and Cities

Relevant Legislation

Jervis Bay Territory Acceptance Act 1915

10. Occupational Health and Safety

Administering Agency

Department of Jobs and Small Business

Relevant Legislation

Work Health and Safety Act 2011
Work Health and Safety Regulations 2011

11. Australian Antarctic Territory

Administering Agency

Department of the Environment and Energy (Australian Antarctic Division)

Relevant Legislation

Antarctic Treaty (Environment Protection) Act 1980
Antarctic Treaty (Environment Protection) (Environmental Impact Assessment) Regulations 1993
Antarctic Treaty (Environment Protection) (Waste Management) Regulations 1994
Environment Protection and Biodiversity Conservation Act 1999
Environment Protection and Biodiversity Conservation Regulations 2000

12. Territory of Heard Island and McDonald Islands

Administering Agency

Department of the Environment and Energy (Australian Antarctic Division)

Relevant Legislation

Environment Protection and Management Ordinance 1987 (HIMI)

Environment Protection and Biodiversity Conservation Act 1999

Heard Island and McDonald Islands Marine Reserve management plan in operation under the Environment Protection and Biodiversity Conservation Act 1999

Environment Protection and Biodiversity Conservation Regulations 2000

13. National or World Heritage Places

Administering Agency

Department of the Environment and Energy

Relevant Legislation

Environment Protection and Management Ordinance 1987 (HIMI)

Antarctic Treaty (Environment Protection) (Environmental Impact Assessment) Regulations 1993

Environment Protection and Biodiversity Conservation Act 1999

Heard Island and McDonald Islands Marine Reserve management plan in operation under the Environment Protection and Biodiversity Conservation Act 1999

Environment Protection and Biodiversity Conservation Regulations 2000

14. National Parks

Administering Agency

Director of National Parks, Environment and Energy Portfolio

Relevant Legislation

Commonwealth Reserve management plans in operation under the Environment Protection and Biodiversity Conservation Act 1999

Environment Protection and Biodiversity Conservation Act 1999

Environment Protection and Biodiversity Conservation Regulations 2000

15. Commonwealth funding for building work

Administering Agency

Department of Jobs and Small Business

Relevant Legislation

Building and Construction Industry (Improving Productivity) Act 2016

Building and Construction Industry (Improving Productivity) Regulations 2017

Building and Construction Industry (Consequential and Transitional Provisions) Act 2016

Fair Work (Building industry - Accreditation Scheme) Amendment Regulation 2014

Building Code 2013 (issued under Section 27 of the Fair Work (Building Industry) Act 2012)

16. Commonwealth buildings

Administering Agency

Department of Jobs and Small Business

Relevant Legislation

Building and Construction Industry (Improving Productivity) Act 2016

Building and Construction Industry (Improving Productivity) Regulations 2017

Building and Construction Industry (Consequential and Transitional Provisions) Act 2016

Fair Work (Building industry - Accreditation Scheme) Amendment Regulation 2014

Building Code 2013 (issued under Section 27 of the Fair Work (Building Industry) Act 2012)

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Schedule 4 Australian Capital Territory

Introduction

Footnote: Other legislation affecting water and plumbing systems

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ACT Introduction

The Australian Capital Territory Appendix to the Plumbing Code of Australia (PCA) forms part of the ACT Plumbing Code in accordance with the Water and Sewerage Act 2000. The ACT Appendix contains variations and additions to the PCA that apply to plumbing and drainage work undertaken in the ACT and information about the application of the PCA in the ACT. The ACT Appendix is notified on the ACT Legislation Register and can be found at <https://www.legislation.act.gov.au/a/2000-68/> under the Regulations and Instruments tab. While some ACT-specific clauses are flagged in the text of the PCA, others may not be. Users of the PCA should confirm they are using the version of the ACT Appendix currently in force and are applying all relevant variations and additions. Historical versions of the ACT Appendix are also available on the register.

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ACT Footnote: Other legislation affecting water and plumbing systems

In addition to this Code, there are a number of other legislative technical requirements affecting the design, construction, installation, replacement, repair, alteration and maintenance of water and plumbing systems that practitioners may need to be aware of including, but not necessarily limited to, the following list.

1. Plumbing and Drainage

Administering Agency

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Water and Sewerage Act 2000

2. Building

Administering Agency

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Building Act 2004

3. Health

Administering Agency

Health Directorate

Relevant Legislation

Health Act 1993

4. Environment

Administering Agency

Environment, Planning and Sustainable Development Directorate

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Environment Protection Act 1997

5. Gas

Administering Agency

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Gas Safety Act 2000

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6. Electrical

Administering Agency

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Electricity Safety Act 1971

7. Utilities

Administering Agency

Environment, Planning and Sustainable Development Directorate

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Utilities Act 2000

Utilities (Technical Regulation) Act 2014

8. Planning

Administering Agency

Environment, Planning and Sustainable Development Directorate

Chief Minister, Treasury and Economic Development Directorate

Relevant Legislation

Planning and Development Act 2007

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Schedule 5 **New South Wales**

Section A **Governing requirements**

- Part A6 Building classification
- NSW A6G7 Class 6 buildings

Section B **Water services**

- Part B1 Cold water services
- NSW B1D4 General requirements
- Part B2 Heated water services
- B2P7 Energy use and source
- NSW B2V1 Greenhouse gas intensity of a water heater
- NSW B2D2 Water heater in a heated water supply system
- NSW B2D5 Maximum delivery temperature
- NSW B2D6 Temperature control devices
- Part B3 Non-drinking water services
- NSW B3D3 General requirements
- NSW Part B4 Fire-fighting water services
- Part B5 Cross-connection control
- NSW B5D6 Cooling tower water service
- Part B6 Rainwater ~~services~~ **harvesting and use**
- B6D5 ~~Access and isolation~~ **Buried and partially buried tanks**

Section C **Sanitary plumbing and drainage systems**

- Part C2 Sanitary drainage systems
- NSW C2D4 General requirements

Schedule 1 **Definitions**

Footnote: Other legislation affecting buildings

Section A Governing requirements

Part A6 Building classification

Insert clause NSW A6G7 as follows:

NSW A6G7 Class 6 buildings

[2019: NSW A6.6]

A Class 6 building is a shop or other building for sale of goods by retail or the supply of services direct to the public, including—

- (a) an eating room, cafe, restaurant, milk or soft drink bar; or
- (b) a dining room, bar, shop or kiosk part of a hotel or motel; or
- (c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
- (d) market or sale room, showroom, or *service station*.

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Section B Water services

Part B1 Cold water services

Insert clause NSW B1D4 as follows:

NSW B1D4 General requirements

[2019: NSW B1.4(1)]

The design, construction, installation, replacement, repair, alteration and maintenance of cold water services must be in accordance with AS/NZS 3500.1, except that after clause 5.3.2(k) add (l) as follows: (l) Where valves are located below ground within the property boundary, they shall be provided with a surface box and riser. The box lid shall be permanently marked with a "W".

Part B2 Heated water services

B2P7 Energy use and source

[2019: BP2.6]

Compliance is not required with the national provisions of BP2.6(3) as the sources of energy for new Class 1 and 10 buildings are regulated under BASIX.

Delete B2V1 and insert NSW B2V1 as follows:

NSW B2V1 Greenhouse gas intensity of a water heater

This clause has deliberately been left blank.

B2V1 does not apply in NSW as the sources of energy for new Class 1 and 10 buildings are regulated under BASIX.

Delete B2D2 and insert NSW B2D2 as follows:

NSW B2D2 Water heater in a heated water supply system

This clause has deliberately been left blank.

Compliance is not required with the national provisions of B2D2 as the sources of energy for new Class 1 and 10 buildings are regulated under BASIX.

Insert clause NSW B2D5 as follows:

NSW B2D5 Maximum delivery temperature

[2019: NSW B2.5(a)(iv)]

The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

- (a) not more than 45°C in any—
 - (i) residential part of an *aged care building*; or
 - (ii) *patient care area* in a *health-care building*; or
 - (iii) part of an *early childhood centre*, or primary or secondary school, that is used by children; or
 - (iv) any facility designated for use by people with a disability; or
- (b) not more than 50°C in all other cases.

Applications:

B2D5 only applies to new heated water installations for personal hygiene purposes.

Insert clause NSW B2D6 as follows:

NSW B2D6 Temperature control devices

[2019: NSW B2.6(2)(d), Application 1 and Exemption 1]

- (1) A temperature control device used to deliver *heated water* in accordance with B2D5(a) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap.
- (2) A temperature control device used to deliver *heated water* in accordance with B2D5(b) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or
 - (d) temperature limited water heater with a maximum delivery temperature of 50°C marked in accordance with AS 3498.
- (3) The *required* maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

Applications:

B2D6 only applies to—

- (a) all new *heated water* services; or
- (b) replacing a hot water heater, regardless of the type or location of the heater.

Exemptions:

A temperature control device need not be installed if one or more, but not all, heating units in a manifold water heater are replaced.

Part B3 Non-drinking water services

Insert clause NSW B3D3 as follows:

NSW B3D3 General requirements

[2019: NSW B3.3]

The design, construction, installation, replacement, repair, alteration and maintenance of a *non-drinking water* service must be in accordance with AS/NZS 3500.1 with the following additions to clause 10.3:

- (a) 10.3(d): Top up from a drinking water supply shall be by an indirect trickle top up with a visible air gap external to the tank.
- (b) 10.3(e): There shall be no connection between treated greywater systems and drinking water, rainwater or other sources of supply.

Explanatory Information:

Requirements for the design, construction, installation, replacement, repair, alteration and maintenance of a *non-drinking water* service used for fire-fighting purposes are contained in Part B4.

NSW Part B4 Fire-fighting water services

This Part does not apply in New South Wales as fire-fighting water services are regulated under the Environmental Planning

and Assessment Act 1979 and Environmental Planning and Assessment Regulation 2000, which references the Building Code of Australia.

Part B5 Cross-connection control

Insert clause NSW B5D6 as follows:

NSW B5D6 Cooling tower water service

[2019: NSW B5.501]

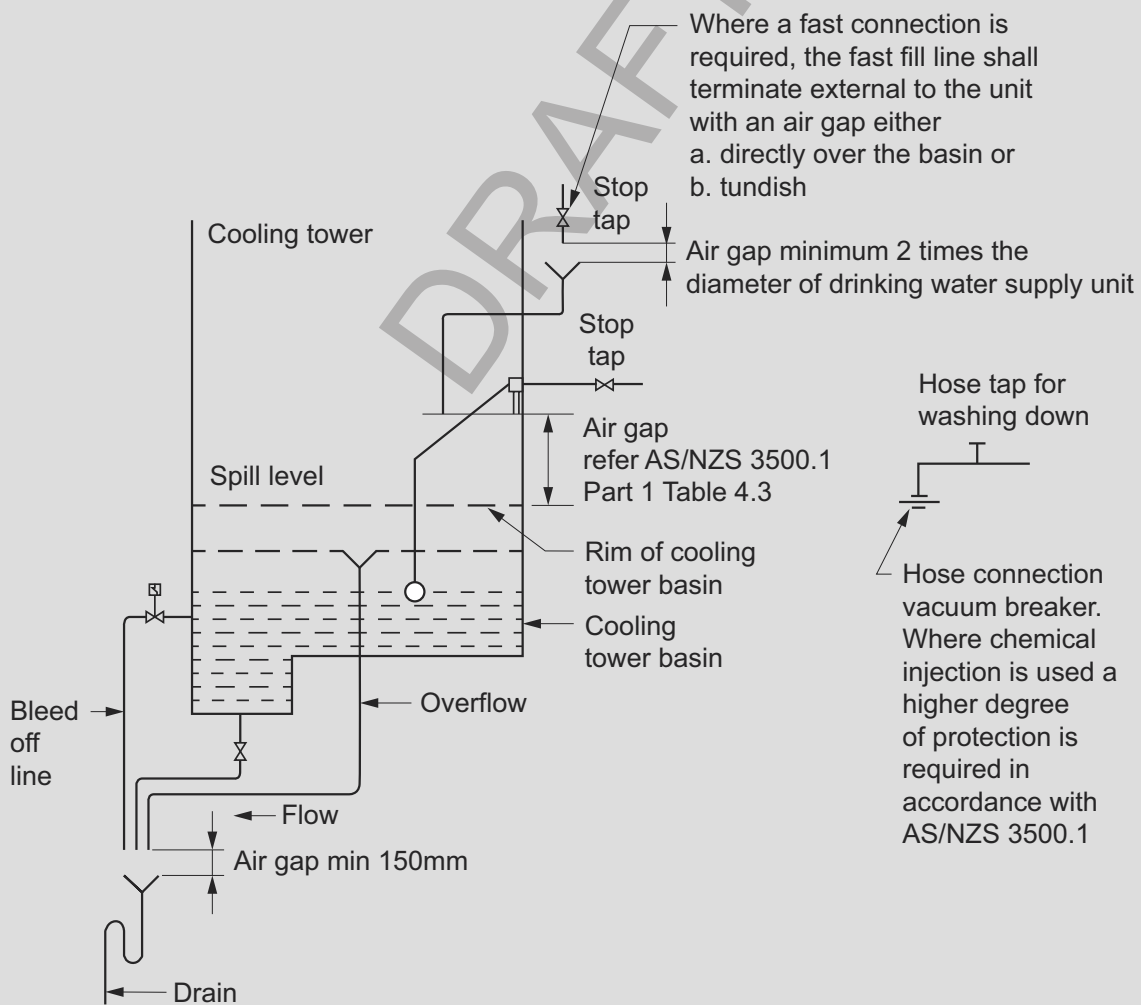
Water systems permanently attached to cooling towers backflow prevention shall be positioned so that—

- (a) cooling tower air gap must be measured from the rim of the cooling tower basin; and
- (b) if a drinking water service to the cooling tower passes through the basin, the service pipe must be provided with a double wall protection; and
- (c) if a fast fill connection is required, the fast fill line shall terminate externally to the unit, with an air gap over either the basin or a tundish.

Notes:

See NSW Figure B5D6 for typical cooling tower connections.

Figure B5D6: Typical cooling tower connections



Part B6 Rainwater services~~harvesting and use~~

B6D5 Access and isolation~~Buried and partially buried tanks~~

[New for 2022]

Insert subclause NSW B6D5(2) in clause B6D5 as follows:

- (2) Isolation of appliances and backflow prevention devices for testing and maintenance, must be provided in accordance with AS/NZS 3500.1.~~Buried and partially buried tanks must comply with section 16 of AS/NZS 3500.1 with the following additions to clause 16.3.3:~~
- (a) ~~Insert clause 16.3.3(d) as follows: Single residential dwellings require the following:~~
 - (i) ~~For buried or partly buried rainwater tanks, a non-testable dual check valve with atmospheric port is required for containment protection.~~
 - (ii) ~~A non-testable device for zone protection.~~
 - (b) ~~Insert clause 16.3.3(e) as follows: Where rainwater tanks are installed for other than a single residential dwelling approval must be obtained from the water supply Network Utility Operator for containment.~~
 - (c) ~~Insert clause 16.3.3(f) as follows: The Network Utility Operator reserves the right to require greater backflow for containment.~~

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Section C Sanitary plumbing and drainage systems

Part C2 Sanitary drainage systems

Insert clause NSW C2D4 as follows:

NSW C2D4 General requirements

[2019: NSW C2.4]

The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *drainage* system must be in accordance with AS/NZS 3500.2 with the following variations:

- (a) For clause 4.4.1 insert the following as the second paragraph: Boundary trap or inspection shafts cannot terminate within areas of buildings as defined in the NCC as a *habitable room*. See NCC “Definitions” and delete ‘excludes’ from (b).
- (b) After clause 4.5.2(b) insert (c) as follows: Soil and waste stacks shall not discharge through a reflux valve except where a reflux valve is installed at the connection to the sewer required with surcharging sewers.
- (c) Substitute clause 4.5.3 as follows: Where a surcharge is likely to occur and a reflux valve is to be installed, it shall be located in accordance with (i) and (ii) as follows:
 - (i) Where the drain has an inspection shaft or boundary trap, the reflux valve shall be located immediately downstream from and adjacent to the outlet of the shaft or trap.
 - (ii) The invert of the outlet of the reflux valve shall be installed a minimum of 80 mm higher than the invert of the *Network Utility Operator’s* system it is connected to. See *NSW Figures C2D4a* and *C2D4b*.
- (d) After clause 4.7.1(h) insert (i) as follows: At each branch off a main line internal of the building connecting one or more water closets or slop hoppers. In these cases, inspection openings must be raised to finished surface level in an accessible position and sealed with an airtight cover. If access to the under floor area is more than 600 mm above the inspection opening, the riser may be omitted.
- (e) After clause 12.7(g) insert (h) as follows: Sewage management facilities shall be accredited by NSW Health and comply with local government requirements. Before a connection is made to pump raw sewage or effluent from a septic tank or holding well to the *Network Utility Operator’s* sewer, an application must be made to that *Network Utility Operator*. Applicants must meet the pump to sewer requirements and conditions for all connections to the sewer. A marker tape must be laid along the top of all pump discharge or rising mains pipes at intervals of not more than 3 m.
- (f) After clause 4.3.1(h) insert (i) as follows: not have DN 40 or DN 50 traps installed.

Figure C2D4a: Reflux valves - diagram 1

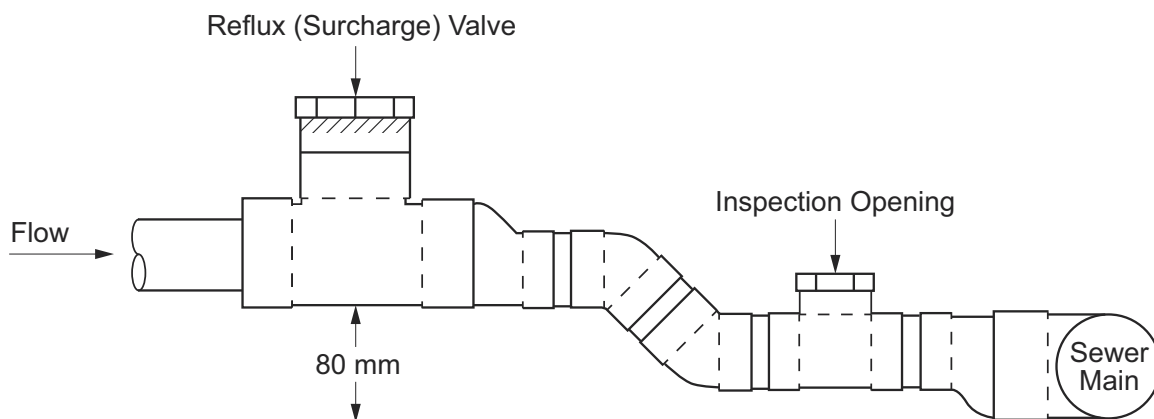
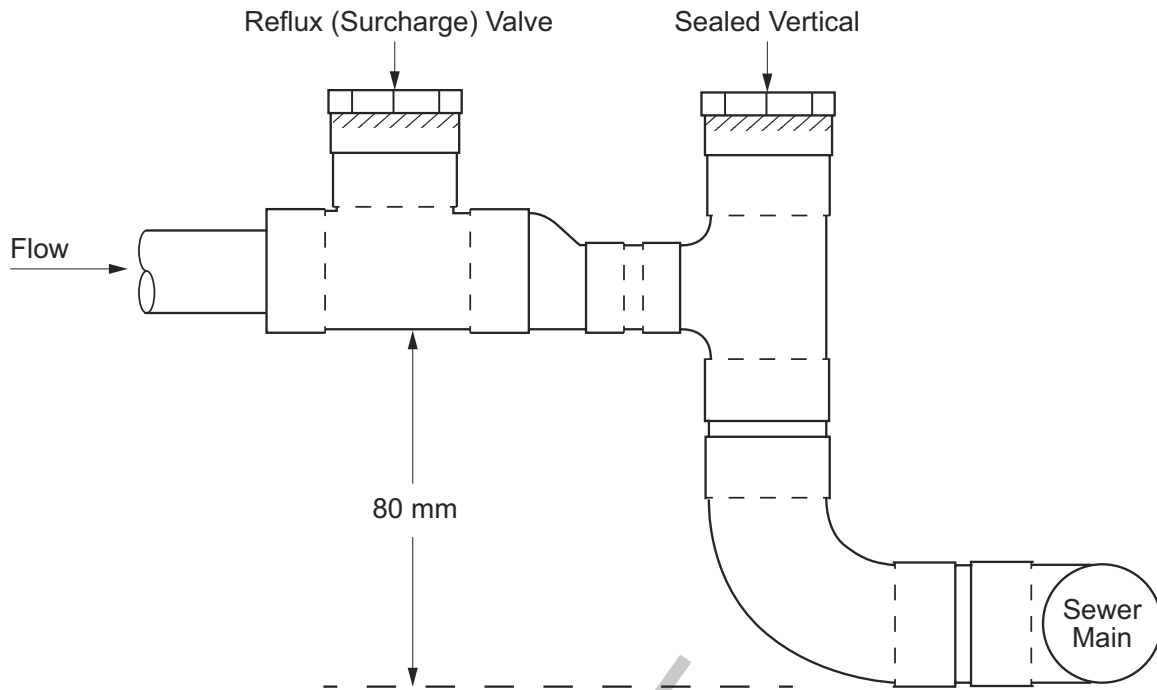


Figure C2D4b: Reflux valves - diagram 2



Notes:

Where a reflux valve is installed the valve remains the responsibility of the property owner.

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Schedule 1 Definitions

Aisle: A walkway at the end of *rows* of seating, not being *continental seating*, leading to a cross-over or to an egress doorway.

Appropriate authority: The relevant authority with the responsibility to determine the particular matter.

Assembly building: A building where people may assemble for—

- (a) civic, theatrical, social, political or religious purposes including a library, theatre, public hall or place of worship; or
- (b) educational purposes in a *school*, *early childhood centre*, preschool, or the like; or
- (c) entertainment, recreational or sporting purposes including—
 - (i) a cinema; or
 - (ii) a sports stadium, sporting or other club; or
- (d) transit purposes including a bus station, railway station, airport or ferry terminal.

Designated bushfire prone area: Land that:

- (a) has been designated under legislation; or
- (b) has been identified under an environmental planning instrument, development control plan or in the course of processing and determining a development application,

as land that can support a bushfire or is likely to be subject to bushfire attack.

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NSW Footnote: Other legislation affecting buildings

1. Plumbing and Drainage

Administering Agency

Office of Local Government

Relevant Legislation

Local Government Act 1993

Local Government (General) Regulation 2005

Administering Agency

NSW Fair Trading

Relevant Legislation

Plumbing and Drainage Act 2011

Plumbing and Drainage Regulation 2017

Approval to Connect to Network Utility Operator's System

Refer to the *Network Utility Operator* for the current Act and Regulation

Hunter Water Act 1991

Sydney Water Act 1994

Water Industry Competition Act (WICA) 2006

2. Building

Administering Agency

Department of Planning and Environment

Relevant Legislation

Environmental Planning and Assessment Act 1979

Environmental Planning and Assessment Regulation 2000

3. Health

Administering Agency

NSW Ministry of Health

Relevant Legislation

Public Health Act 2010

Public Health Regulation 2012

4. Environment

Administering Agency

Office of Environment & Heritage

Relevant Legislation

Protection of the Environment Operations Act 1997

5. Gas

Administering Agency

Department of Planning and Environment, Energy, Water and Portfolio Strategy

Relevant Legislation

Gas Supply Act 1996

Gas Supply (Safety and Network Management) Regulation 2013

Administering Agency

NSW Fair Trading

Relevant Legislation

Gas and Electricity (Consumer Safety) Act 2017

Gas and Electricity (Consumer Safety) Regulation 2018

6. Electrical

Administering Agency

NSW Fair Trading

Relevant Legislation

Electricity (Consumer Safety) Act 2017

Electricity (Consumer Safety) Regulation 2018

Administering Agency

SafeWork NSW

Relevant Legislation

Work Health and Safety Regulation 2017

DRAFT

Schedule 6 Northern Territory

Introduction

Section B

Water services

Part B2	Heated water services
B2P7	Energy use and source
NT B2V1	Greenhouse gas intensity of a water heater
NT B2D2	Water heater in a heated water supply system
B2D9	Design, construction and installation General requirements
NT Part B4	Fire-fighting water services

Section C

Sanitary plumbing and drainage systems

Part C2	Sanitary drainage systems
NT C2F2	Swimming pool waste water disposal
NT C2P2	Swimming pool drainage
NT C2D3	Swimming pool drainage
NT C2D4	General requirements

Section D

Excessive noise

Part D1	Excessive noise
D1D1	Deemed-to-Satisfy Provisions
NT D1D3	Sound insulation

Footnote: Other legislation affecting buildings

NT Introduction

This Appendix contains variations and additions to the Building Code of Australia (BCA) provisions which are considered necessary for the effective application of the Code in the Northern Territory.

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Section B Water services

Part B2 Heated water services

B2P7 Energy use and source

[2019: BP2.6]

Delete B2V1 and insert NT B2V1 as follows:

NT B2V1 Greenhouse gas intensity of a water heater

This clause has deliberately been left blank.

Delete B2D2 and insert NT B2D2 as follows:

NT B2D2 Water heater in a heated water supply system

This clause has deliberately been left blank.

B2D9 Design, construction and installation **General requirements**

[2019: B2.9]

Delete B2D9(1) and replace with NT B2D9(1) as follows:

- (1) ~~The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with AS/NZS 3500.4, subject to the concession set out at (3).~~

Insert subclause NT B2D9(3) in clause B2D9 as follows:

- (3) ~~For the purposes of AS/NZS 3500.4, where a replacement solar water heater is being fitted and the cold water isolating valve is already fitted on the roof to service the original water heater, this valve can form part of the new solar water heater installation and remain on the roof without being re-located as per clause 5.9.4(a).~~

NT Part B4 Fire-fighting water services

Part B4 does not apply in the Northern Territory.

Section C Sanitary plumbing and drainage systems

Part C2 Sanitary drainage systems

Delete C2F2 and insert NT C2F2 as follows:

NT C2F2 Swimming pool waste water disposal

This clause has deliberately been left blank.

Delete C2P2 and insert NT C2P2 as follows:

NT C2P2 Swimming pool drainage

This clause has deliberately been left blank.

Delete C2D3 and insert NT C2D3 as follows:

NT C2D3 Swimming pool drainage

This clause has deliberately been left blank.

Insert clause NT C2D4 as follows:

NT C2D4 General requirements

[2019: NT C2.4(1)]

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *drainage* system must be in accordance with AS/NZS 3500.2 with the following variations:
 - (a) Substitute clause 4.6.6.6 as follows: A minimum height of 100 mm shall be maintained between the top of the overflow gully riser and the lowest fixture connected to the drain.
 - (b) Substitute clause 4.6.6.7 as follows: The minimum height between the top of the overflow gully riser and the surrounding natural ground surface level shall be 150 mm, except where the gully riser is located in a path or paved area, where it shall be finished at a level so as to prevent the ponding and ingress of water.
- (2) Inspection openings are only required—
 - (a) at the connections to the *Network Utility Operator* sewer main; and
 - (b) where a new section of drain is to be connected to an existing drain; and
 - (c) as required by the regulator.
- (3) A domestic *swimming pool* must not be connected to sewer main.
- (4) A *swimming pool* other than a domestic *swimming pool*, must not be connected to a sewer main without the approval of the *Network Utility Operator*.
- (5) A clothes washing machine must not discharge into a floor waste gully.

Section D Excessive noise

Part D1 Excessive noise

D1D1 Deemed-to-Satisfy Provisions

[2019: D1.1]

Delete D1D1(1) and replace with NT D1D1(1) as follows:

(1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement*—

(a) D1P1 is satisfied by complying with D1D2; and

(b) D1P2 is satisfied by complying with—

(i) NT F5.0 through to NT F5.8 in the NT Appendix to NCC Volume One for Class 2, 3 and 9c buildings; and

(ii) NT Part 3.8.6 in NCC Volume Two for Class 1 buildings.

Delete D1D3 and insert NT D1D3 as follows:

NT D1D3 Sound insulation

This clause has deliberately been left blank.

DRAFT

NT Footnote: Other legislation affecting buildings

1. Plumbing and Drainage

Administering Agency

Department of Infrastructure, Planning and Logistics

Department of Attorney-General and Justice

Relevant Legislation

Building Act

Building Regulations

Plumbers and Drainers Licencing Act

2. Building

Administering Agency

Department of Infrastructure, Planning and Logistics

Relevant Legislation

Building Act

Building Regulations

3. Health

Administering Agency

Department of Health

Relevant Legislation

Public and Environmental Health Act

Public and Environmental Health Regulations

4. Planning

Administering Agency

Department of Infrastructure, Planning and Logistics

Relevant Legislation

Planning Act

5. Gas

Administering Agency

Department of Attorney-General and Justice (NT WorkSafe)

Relevant Legislation

Dangerous Goods Act

DRAFT

6. Electrical

Administering Agency

Department of Attorney-General and Justice (NT WorkSafe)

Relevant Legislation

Electrical Workers and Contractors Act

Electricity Reform Act

Electrical Reform (Safety and Technical) Regulations

7. Water Supply and Sewage Services

Administering Agency

Power and Water Corporation

Relevant Legislation

Water Supply and Sewerage Services Act

Water Supply and Sewerage Services Regulations

DRAFT

Schedule 7 Queensland

Introduction

Section B

Water services

Part B1	Cold water services
B1D2	Water efficiency Sanitary flushing
Part B2	Heated water services
QLD B2P7	Energy use and source
QLD B2V1	Greenhouse gas intensity of a water heater
QLD B2D2	Water heater in a heated water supply system
QLD B2D5	Maximum delivery temperature
QLD B2D6	Temperature control devices
QLD Part B4	Fire-fighting water services

Schedule 1

Definitions

DRAFT

QLD Introduction

This Appendix contains variations and additions to the Building Code of Australia (BCA) provisions which are considered necessary for the effective application of the Code in Queensland and shall be treated as amendments to the Code.

DRAFT

Section B Water services

Part B1 Cold water services

B1D2 Water efficiency ~~Sanitary-flushing~~

[2019: B1.2]

Part B2 Heated water services

Delete B2P7 and insert QLD B2P7 as follows:

QLD B2P7 Energy use and source

This clause has deliberately been left blank.

Delete B2V1 and insert QLD B2V1 as follows:

QLD B2V1 Greenhouse gas intensity of a water heater

This clause has deliberately been left blank.

Delete B2D2 and insert QLD B2D2 as follows:

QLD B2D2 Water heater in a heated water supply system

This clause has deliberately been left blank.

Insert clause QLD B2D5 as follows:

QLD B2D5 Maximum delivery temperature

[2019: QLD B2.5 Application 1]

The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

- (a) not more than 45°C in any—
 - (i) residential part of an *aged care building*; or
 - (ii) *patient care area* in a *health-care building*; or
 - (iii) part of an *early childhood centre*, or primary or secondary school, that is used by children; or
 - (iv) designated *accessible* facility in a common area of Class 2 building, or in any part of a Class 3, 5, 6, 7, 8, 9a, 9b, 9c or 10 building; or
- (b) not more than 50°C in all other cases.

Insert clause QLD B2D6 as follows:

QLD B2D6 Temperature control devices

[2019: QLD B2.6 Application 1]

- (1) A temperature control device used to deliver *heated water* in accordance with B2D5(a) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap.
- (2) A temperature control device used to deliver *heated water* in accordance with B2D5(b) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or
 - (d) temperature limited water heater.
- (3) The *required* maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

QLD Part B4 Fire-fighting water services

Part B4 does not apply in Queensland. Fire-fighting water services are required under the Queensland Building Act 1975.

DRAFT

Schedule 1

Definitions

- (a) A member of a building specifically designed to take part of the building loads and includes roof, ceiling, floor, stairway or ramp and wall framing members including bracing members designed for the specific purpose of acting as a brace to those members.
- (b) Door jambs, window frames and reveals, architraves and skirtings.

DRAFT

Schedule 8 South Australia

Introduction

Section A

Governing requirements

Part A6	Building classification
SA A6G7	Class 6 buildings

Section B

Water services

Part B1	Cold water services
SA B1D4	General requirements
Part B2	Heated water services
SA B2D2	Water heater in a heated water supply system
B2D9	Design, construction and installation General requirements

Section C

Sanitary plumbing and drainage systems

Part C1	Sanitary plumbing systems
SA C1D3	General requirements

Schedule 1

Definitions

Footnote: Other legislation affecting buildings

DRAFT

SA Introduction

This Appendix contains variations and additions to the BCA provisions which are considered necessary for the effective application of the Code in South Australia.

These variations and additions are to be treated as amendments to the BCA and apply to the construction or alteration of all buildings requiring approval under the Development Act 1993 and Regulations 2008.

DRAFT

Section A Governing requirements

Part A6 Building classification

Insert clause SA A6G7 as follows:

SA A6G7 Class 6 buildings

[2019: SA A6.6]

A Class 6 building is a shop or other building for the sale of goods by retail or the supply of services direct to the public, including—

- (a) an eating room, cafe, restaurant, milk or soft drink bar; or
- (b) a dining room, bar, shop or kiosk part of a hotel or motel; or
- (c) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
- (d) market or sale room, showroom, or *service station*; or
- (e) a *small arts venue*.

DRAFT

Section B Water services

Part B1 Cold water services

Insert clause SA B1D4 as follows:

SA B1D4 General requirements

[2019: SA B1.4(1) and (2)]

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of cold water services must be in accordance with —
 - (a) AS/NZS 3500.1 with the additions set out at (2) and (3); and
 - (b) the requirements of (4).
- (2) After 16.4, insert clause 16.4.1 as follows: 16.4.1 A reduction of the hazard ratings listed in table 16.4 may be permitted following a risk assessment of the design and installation of the rainwater tank and other environmental factors in accordance with clause 16.4.2.
- (3) After 16.4.1, insert clause 16.4.2 as follows: 16.4.2 For buried and partly buried rainwater tanks without connection to a drinking water supply or with direct or indirect connections to a drinking water supply, a dual-check valve may be used in lieu of a testable device for containment and zone protection where it has been determined by risk assessment that—
 - (a) the risk to tank rainwater quality from air pollution is low; and
 - (b) the risk to tank rainwater quality from groundwater and/or surface water contamination is low. In assessing this risk the permeability of the tank and piping materials and joints to groundwater contaminants should be addressed; and
 - (c) precautions in the design and installation of the rainwater collection system have been taken to reduce impacts to tank rainwater quality from the roof collection and delivery system. Such measures include, but are not restricted to, appropriate materials, gutter guards, filters, first flush devices, dry inlets, guards to exclude vermin and mosquitoes, and the quality of tank maintenance programs; and
 - (d) precautions in the design and installation of the rainwater tank have been taken to reduce impacts to tank rainwater quality from groundwater and surface water pollution. Such measures include, but are not limited to—
 - (i) location and topography; and
 - (ii) structural integrity of the tank including installation factors such as bedding, embedment, compaction and geotechnical specifications; and
 - (iii) water tightness of tank including all penetrations, connections, access covers and joints; and
 - (iv) ingress of vermin through the overflow e.g. by provision of a reflux valve, self-sealing valve, trap check valve; and
 - (v) the risk assessment results must be submitted to the authority having jurisdiction.
- (4) For Class 1 buildings and extensions or additions to Class 1 buildings where the roof area is not less than 50 m², where a water service from a rainwater tank is permitted to interconnect with the water service from a water main supply, the supply to a fixture, appliance or water outlet shall be maintained by a device/mechanism that facilitates a seamless automatic switching from one water service supply to another and vice versa without the need for manual intervention.

Part B2 Heated water services

Insert clause SA B2D2 as follows:

SA B2D2 Water heater in a heated water supply system

[2019: SA B2.2]

- (1) In an established Class 1 building connected to a reticulated gas supply or a new Class 1 or Class 10 building, a

water heater must be one of the following types:

- (a) A natural gas or LPG water heater, either instantaneous, continuous flow or storage, that has an energy rating of 5 stars or more.
 - (b) A natural gas or LPG boosted solar water heater, with a total tank volume of not more than 700 litres, that is eligible for any number (one or more) of STCs.
 - (c) An electric boosted solar water heater or electric heat pump water heater (air source or solar boosted), with a single tank, that—
 - (i) for systems with a tank volume of 400 litres or more and not more than 700 litres, is eligible for at least 38 Small-scale Technology Certificates (STCs) in Zone 3 as defined by the Clean Energy Regulator [CER] and / or eligible for at least 36 STCs in CER Zone 4, or
 - (ii) for systems with a tank volume of more than 220 litres and less than 400 litres, is eligible for at least 27 STCs in CER Zone 3 and / or eligible for at least 26 STCs in CER Zone 4, or
 - (iii) for systems with a tank volume of not more than 220 litres, is eligible for at least 17 STCs in CER Zone 3 and / or eligible for at least 16 STCs in CER Zone 4.
 - (d) A wood combustion water heater, with no additional heating mechanisms, with a total tank volume of not more than 700 litres.
 - (e) A wood combustion boosted solar water heater, with no additional heating mechanisms, with a total tank volume of not more than 700 litres.
- (2) In an established Class 1 building that is not connected to a reticulated gas supply, a water heater must be one of the following types:
- (a) A water heater complying with the requirements set out in (1).
 - (b) An electric water heater with a rated hot water delivery of no greater than 250 litres.
 - (c) An electric instantaneous water heater, having a water storage capacity no greater than one litre and total electrical input no greater than 15.0 kW.
- (3) The requirements of (1) and (2) do not apply to any of the following:
- (a) Water heaters serving buildings other than Class 1.
 - (b) Repairs to water heaters including:
 - (i) Like for like replacements that are the result of manufacturer, supplier or installer warranty arrangements.
 - (ii) Replacement of a single major component of a solar or electric heat pump water heater (for example, a heat pump compressor/evaporator unit, a solar collector, or a storage tank).
 - (c) Secondary electric water heaters of up to 55 litres rated delivery, which do not serve a shower or bath.
 - (d) Temporary electric water heaters of up to 55 litres rated delivery, for a period not exceeding 60 days, pending installation of a complying water heater.
 - (e) An electric or gas vented (gravity fed) water heater, located in a roof space of an established Class 1 building, of no greater than 250 litres rated hot water delivery.
 - (f) A gas water heater installed entirely within a fully enclosed roof space, room or attached garage of an established Class 1 building, providing the water heater has an energy rating of 3 stars or more.

Explanatory Information: Connection to a reticulated gas supply

A property is connected to a reticulated gas supply if it has a piped connection to a gas distribution system and this connection is capable of supplying gas to gas equipment and/or appliances.

A property is not connected to a reticulated gas supply if:

- It does not have a piped connection to a gas distribution system; or
- It has a piped connection to a gas distribution system but this connection is not capable of supplying gas to gas equipment and/or appliances (for example, if the supply has been physically disconnected at the meter by the gas network operator).

Reticulated gas includes:

- Reticulated natural gas; or
- Reticulated compressed gas of some other type (including LPG, SNG or TLP gas).

Explanatory Information: Gas water heaters

The energy ratings for natural gas and LPG water heaters are available at: http://www.aga.asn.au/product_directory

Explanatory Information: Solar water heaters and electric heat pump water heaters

STCs are Small-scale Technology Certificates. References to Renewable Energy Certificates (RECs) refer equally to STCs. The number of STCs is provided for each eligible model of solar water heater and electric heat pump water heater at: <http://ret.cleanenergyregulator.gov.au/Hot-Water-Systems/Eligible-Solar-Water-Heaters/eligible-swhs>.

The STC values specified in Section SA B2D2 for either CER Zones 3 or 4 may be used to demonstrate compliance, regardless of the actual zone in which the water heater is to be installed.

B2D9 Design, construction and installation **General requirements**

[2019: B2.9]

Delete B2D9(1) and replace with SA B2D9(1) as follows:

- (1) ~~The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with AS/NZS 3500.4 with the following variations:~~
 - (a) ~~After clause 1.11.2(b), insert (c), (d), (e) and (f) as follows:~~
 - (i) ~~1.11.2(c): Heated water services in buildings constructed after 10 October 1995 shall have temperature control in accordance with items (a) and (b).~~
 - (ii) ~~1.11.2(d): All new solar water heater installations (including solar heater replacements) shall be in accordance with items (a) and (b).~~
 - (iii) ~~1.11.2(e): Where an existing building is altered, or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed, the delivery temperature at the fixture shall be in accordance with items (a) and (b).~~
 - (iv) ~~1.11.2(f): Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater, and the device must meet the requirements of items (a) and (b).~~
 - (b) ~~After clause 11.2, note 4, insert note 5 as follows: A duty of care should be exercised by installers to explain to clients the merits of temperature control for heated water delivered to existing sanitary fixtures used primarily for personal hygiene purposes.~~
 - (c) ~~Substitute clause 5.8(c) as follows: All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves.~~
 - (d) ~~Substitute clause 5.11.2.1 as follows: The drain lines from the outlet of the temperature/pressure relief valve and the expansion control valve on an individual water heater shall not be interconnected.~~
 - (e) ~~Substitute clause 5.11.3(e) as follows: All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.~~

Section C Sanitary plumbing and drainage systems

Part C1 Sanitary plumbing systems

Insert clause SA C1D3 as follows:

SA C1D3 General requirements

[2019: SA C1.3]

The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *plumbing* system must be in accordance with AS/NZS 3500.2 with the following variations:

- (a) After clause 4.7.1(h), insert clause 4.7.1(i) as follows: Inspection openings indicated in 4.7.1(b), (d) (e) and (f) shall be raised to finished surface level. All other inspection openings need not be raised provided they are not below paved, concreted or similar finished surfaces.
- (b) Substitute clause 2.4.1(a) as follows: Bends in pipes shall have a throat radius complying with Table 5.6 and Figure B6 of AS/NZS 1260 (2009) and shall be free from wrinkling and flattening.
- (c) After clause 12.7(g), insert clause 12.7(h) as follows: Buried pumped discharge pipes and rising mains shall be placed in close-fitting durable sleeving or continually spirally wrapped. The sleeving or spiral wrapping shall be identified for the full length with the following statement: “sewer rising main” or “pumped discharge pipe” in accordance with AS 1345.
- (d) After clause 12.7(h), insert clause 12.7(i) as follows: Above ground pumped discharge pipes and rising mains shall be permanently identified with the following statement: “sewer rising main” or “pumped discharge pipe” in accordance with AS 1345. The statement shall be installed in a visible position running longitudinally, at no more than 3 metre intervals.
- (e) After clause 13.9(b), delete the following: Where a bath trap is not accessible, the bath shall discharge untrapped to a floor waste gully (FWG) in accordance with Table 4.6.7.2 and Appendix B.
- (f) After clause 13.27.2, insert clause 13.28 as follows: All trade waste pre-treatment devices shall connect to the sewerage system via a disconnecter gully.

Schedule 1 Definitions

Assembly building: A building where people may assemble for—

- (a) civic, theatrical, social, political or religious purposes including a library, theatre, public hall or place of worship; or
- (b) educational purposes in a *school*, *early childhood centre*, preschool, or the like; or
- (c) entertainment, recreational or sporting purposes including—
 - (i) a discotheque or nightclub; or
 - (ii) a cinema; or
 - (iii) a sports stadium, sporting or other club; or
- (d) transit purposes including a bus station, railway station, airport or ferry terminal.

Farm building: A single *storey* Class 7 or 8 building that is—

- (a) primarily associated with *agriculture* and located on land used primarily for *agriculture*; and
- (b) the total number of people accommodated in the building does not exceed one person per 200 m² of total *floor area*, or six people, whichever is greater; and
- (c) the *floor area* of each building does not exceed the maximum *floor area* and volume specified in Table SA 1 for the type of farm building; and
- (d) the building does not contain occupancies of excessive fire hazard as listed in E1D5 to E1D12; and
- (e) if the building is used for the storage of hay, an open space complying with C3D5(1) is provided around the perimeter of each building.

Insert SA Table SA 1 as follows:

SA Table SA 1: Farm building categories and maximum floor area

Building group	Type of farm building	Maximum floor area	Maximum volume
Group A	Buildings used for keeping, growing and/or harvesting of animals and/or plants, and includes greenhouses with rigid covering material and large implement/vehicle storage sheds.	5,000 m ²	30,000 m ³
Group B	Buildings used for packing, sorting and/or storage of produce and may include workshops.	2,000 m ²	12,000 m ³
Group C	Greenhouses with non-rigid, plastic or fabric covering material.	5,000 m ²	30,000 m ³

SA Footnote: Other legislation affecting buildings

In addition to this Code, there are a number of other legislative technical requirements affecting the design, construction, installation, replacement, repair, alteration and maintenance of plumbing that practitioners may need to be aware of, including, but not necessarily limited to, the following list.

1. Plumbing and Drainage

Administering Authority

Office of the Technical Regulator, Department for Energy and Mining

Relevant Legislation

Water Industry Act 2012

Water Industry Regulations 2012

2. Building

Administering Authority

Department of Planning, Transport and Infrastructure

Relevant Legislation

Development Act 1993

Development Regulations 2008

3. Health

Administering Authority

Health SA

Relevant Legislation

South Australian Health Act 2011

South Australian Public Health (Wastewater) Regulations 2013

Onsite Wastewater Systems Code 2013

Guidelines for the Control of Legionella 2013

Public and Environmental Health (Legionella) Regulations 2008

Safe Water Drinking Act 2011

4. Environment

Administering Authority

Environmental Protection Authority

Relevant Legislation

Environment Protection Act 1993

Environmental Protection Regulations 2009

5. Gas

Administering Authority

Office of the Technical Regulator, Department for Energy and Mining

Relevant Legislation

Gas Act 1997

Gas Regulations 2012

AS/NZS 5601 Gas Installations

AS 3814 Industrial and Commercial Gas Fired Appliances

AS/NZS 1596 The Storage and Handling of LP Gas

Energy Products (Safety and Efficiency) Act 2000

Energy Products (Safety and Efficiency) Regulations 2012

6. Electrical

Administering Authority

Office of the Technical Regulator, Department for Energy and Mining

Relevant Legislation

Electricity Act 1996

Electricity (General) Regulations 2012

Energy Products (Safety and Efficiency) Act 2000

Energy Products (Safety and Efficiency) Regulations 2012

AS/NZS 3000 Wiring Rules

DRAFT

Schedule 9

Tasmania

Introduction

Section A

Governing requirements

Part A1	Interpreting the NCC
A1G4	Interpretation
Part A4	Referenced documents
A4G1	Referenced documents
Part A5	Documentation of design and construction
A5G4	Evidence of suitability – Volume Three (PCA)

Section B

Water services

Part B1	Cold water services
TAS B1D4	General requirements
Part B2	Heated water services
TAS B2D2	Water heater in a heated water supply system
TAS B2D5	Maximum delivery temperature
TAS B2D6	Temperature control devices
Part B6	Rainwater services harvesting and use
B6D2	<u>Design, construction and installation</u> Application of Part

Section C

Sanitary plumbing and drainage systems

Part C2	Sanitary drainage systems
TAS C2P3	On-site wastewater management systems
TAS C2P3	On-site wastewater management systems
TAS C2D4	General requirements

Schedule 1

Definitions

Footnote: Other legislation affecting buildings

TAS Introduction

This Appendix contains variations and additions to the Building Code of Australia (BCA) provisions which are considered necessary for the effective application of the BCA in Tasmania and shall be treated as amendments to the Code.

DRAFT

Section A Governing requirements

Part A1 Interpreting the NCC

A1G14 Interpretation

[2019: A1.0]

Insert subclause TAS A1G14(7) in clause A1G14 as follows:

- (7) The Director of Building Control may issue written advice to deal with arising issues such as interpretation of codes, standards and regulations.

Part A4 Referenced documents

A4G1 Referenced documents

[2019: A4.0]

Delete A4G1(3) and replace with TAS A4G1(3) as follows:

- (3) The following applies:
- (a) Where a new edition, issue or amendment of a primary referenced document is not listed under Schedule 32, for the purposes of the PCA the new addition, issue or amendment shall be referenced upon the publication of that addition, issue or amendment.
 - (b) All Tasmanian legislative documents referenced within the PCA are taken to be the latest published versions thereof unless noted otherwise.

Part A5 Documentation of design and construction

A5G4 Evidence of suitability – Volume Three (PCA)

[2019: A5.3]

Delete A5G4(1) and replace with TAS A5G4(1) as follows:

- (1) The following applies:
- (a) Any product that is intended for use in contact with drinking water must comply with the relevant requirements of AS/NZS 4020 in the form of either—
 - (i) a test report provided by a certification body or NATA accredited testing laboratory, in accordance with AS/NZS 4020; or
 - (ii) a WaterMark Licence issued in accordance with (2) if it includes compliance with AS/NZS 4020.
 - (b) Product certification and authorisation must comply with the procedures set out in the WaterMark Certification Scheme (see ABCB website for details), Tas Part I101 or Tas Part I102 (as appropriate).

Delete A5G4(34) and replace with TAS A5G4(34) as follows:

- (34) A product of a type listed on the WaterMark Schedule of Excluded products requires evidence of suitability in the form of—
- (a) a current certificate issued by a certification body stating that the properties and performance of a product can meet the requirements of the PCA; or
 - (b) a report issued by a NATA accredited testing laboratory which—
 - (i) demonstrates that the product complies with the relevant requirements of the PCA; and
 - (ii) sets out the tests the *product* has been submitted to and the results of those tests and any other relevant information that has been relied upon to demonstrate suitability for the use in a *plumbing* or *drainage* installation.

Delete A5G4(56) and replace with TAS A5G4(56) as follows:

- (56) Evidence to support that a design or system meets the relevant PCA Performance Requirements must be in the form of any one or any combination of the following:
- (a) The design or system complies with a Deemed-to-Satisfy Provision.
 - (b) The design or system is a Performance Solution from a professional engineer or a recognised expert that—
 - (i) certifies that the design or system complies with the relevant requirements of the PCA; and
 - (ii) sets out the basis on which it is given and the extent to which relevant standards, specifications, rules, codes of practice or other publications have been relied upon; and
 - (iii) meets the requirements of TAS Part I101 or TAS Part I102 (as appropriate).

Insert subclause TAS A5G4(67) in clause A5G4 as follows:

- (67) Any new or innovative material or *product* must be assessed, certified and authorised — if required — in accordance with the *WaterMark Certification Scheme* (see ABCB website for details), Tas Part I101 or Tas Part I102 (as appropriate) prior to their use in a *plumbing* or *drainage* installation.

Insert subclause TAS A5G4(78) in clause A5G4 as follows:

- (78) A material or *product* excluded from certification under the Plumbing Code of Australia is authorised for use in a *plumbing* or *drainage* installation if—
- (a) it is certified as complying with the appropriate Australian Standard(s); or
 - (b) other evidence of suitability can be provided in accordance with TAS A5G4(5)(b)(iii).

Insert subclause TAS A5G4(89) in clause A5G4 as follows:

- (89) A material or *product* used in a fire-fighting water service is authorised for use if it is certified by a *recognised expert* as complying with the relevant Australian Standards for the specific application in accordance with TAS A5G4(5)(b)(iii).

Insert subclause TAS A5G4(910) in clause A5G4 as follows:

- (910) A material or *product* used in a stormwater installation is authorised for use if it is certified by a *recognised expert* as complying with Section 2 of AS/NZS 3500.3 in accordance with TAS A5G4(5)(b)(iii).

Insert subclause TAS A5G4(1011) in clause A5G4 as follows:

- (1011) A prefabricated or constructed on-site cold-water storage tank used in a *drinking water* supply system is authorised for use if evidence of compliance with Tas Part B101 in accordance with TAS A5G4(5)(b)(iii) is given.

Section B Water services

Part B1 Cold water services

Insert clause TAS B1D4 as follows:

TAS B1D4 General requirements

[2019: TAS B1.4(1), (2) and (3)]

- (1) The design, construction, installation, repair, alteration, additions, maintenance and commissioning of cold water services must be in accordance with AS/NZS 3500.1.
- (2) Cold water tanks forming part of a *drinking water* supply must comply with Tas Part B101.
- (3) Backflow prevention for boundary containment must comply with the *Network Utility Operator* Boundary Backflow Containment Selection Requirements.

Part B2 Heated water services

Insert clause TAS B2D2 as follows:

TAS B2D2 Water heater in a heated water supply system

[2019: TAS B2.2(1)(a) and (d)]

In a new Class 1 or Class 10 building—

- (a) a water heater in a *heated water* supply system must be—
 - (i) a solar water heater complying with (b); or
 - (ii) a heat pump water heater complying with (b); or
 - (iii) a gas water heater complying with (c); or
 - (iv) an electric resistance water heater complying with AS/NZS 3500.4; or
 - (v) a wood fired thermosiphon water heater or direct fired water heater each complying with AS/NZS 3500.4; and
- (b) a solar water heater and a heat pump water heater must have—
 - (i) for a building with 1 or 2 bedrooms—
 - (A) at least 22 *Small-scale Technology Certificates* for the zone where it is being installed; or
 - (B) an energy saving of not less than 60% in accordance with AS/NZS 4234 for a “medium” load system; and
 - (ii) for a building with more than 4 bedrooms—
 - (A) at least 28 *Small-scale Technology Certificates* for the zone where it is being installed; or
 - (B) an energy saving of not less than 60% in accordance with AS/NZS 4234 for a “large” load system; and
 - (iii) for a building with more than 4 bedrooms—
 - (A) at least 28 *Small-scale Technology Certificates* for the zone where it is being installed; or
 - (B) an energy saving of not less than 60% in accordance with AS/NZS 4234 for a “large” load system; and
- (c) a gas water heater must be rated not less than 5 stars in accordance with AS 4552.

Insert clause TAS B2D5 as follows:

TAS B2D5 Maximum delivery temperature

[2019: TAS B2.5 Application 1 and Exemption 1]

The delivery temperature of *heated water* at the outlet of each sanitary fixture must be—

- (a) not more than 45°C in any—
 - (i) residential part of an *aged care building*; or
 - (ii) *patient care area* in a *health-care building*; or
 - (iii) part of an *early childhood centre*, or primary or secondary school, that is used by children; or
 - (iv) designated *accessible* facility in a common area of Class 2 building, or in any part of a Class 3, 5, 6, 7, 8, 9a, 9b, 9c or 10 building; or
- (b) not more than 50°C in all other cases.

Applications:

B2D5 applies to new and replacement *heated water* installations for personal hygiene purposes.

Exemptions:

B2D5 does not apply to the replacement of a single *heated water* storage unit within a range or bank of heaters.

Insert clause TAS B2D6 as follows:

TAS B2D6 Temperature control devices

[2019: TAS B2.6(d), Application 1 and Exemption 1]

- (1) A temperature control device used to deliver *heated water* in accordance with B2D5(a) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap.
- (2) A temperature control device used to deliver *heated water* in accordance with B2D5(b) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or
 - (d) temperature limited water heater limited to 50°C in accordance with AS 3498.
- (3) The *required* maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

Applications:

B2D6 only applies to new and replacement *heated water* installations.

Exemptions:

B2D6 does not apply to the replacement of a single *heated water* storage unit within a range or bank of heaters.

Part B6 Rainwater ~~services~~ **harvesting and use**

B6D2 ~~Design, construction and installation~~ **Application of Part**

[2019: ~~B6.5~~ **Intro to Part**]

Insert subclause TAS B6D2(3) in clause B6D2 as follows:

- ~~(3) A rainwater harvesting system for Class 1 and 10 Buildings satisfies B6D2 if it is installed in accordance with the requirements within the Tasmanian Building Act — Directors Guidelines — Charged Downpipes to Rainwater Tanks of Class 1 and 10 Buildings for Drinking Water Purposes document.~~

Section C Sanitary plumbing and drainage systems

Part C2 Sanitary drainage systems

Insert clause TAS C2P3 as follows:

TAS C2P3 On-site wastewater management systems

[2019: TAS CP2.201]

Where an *on-site wastewater management system* is installed in a premises and a point of connection to a *Network Utility Operator's* sewerage system is available, the *on-site wastewater management system* must be connected to the *Network Utility Operator's* sewerage system.

Insert clause TAS C2P3 as follows:

TAS C2P3 On-site wastewater management systems

[2019: TAS CP2.201]

Where an *on-site wastewater management system* is installed in a premises and a point of connection to a *Network Utility Operator's* sewerage system is available, the *on-site wastewater management system* must be connected to the *Network Utility Operator's* sewerage system.

Insert clause TAS C2D4 as follows:

TAS C2D4 General requirements

[2019: TAS C2.4(2) and (3)]

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *drainage* system must be in accordance with AS/NZS 3500.2.
- (2) A design and installation method for conveying sewage to an approved disposal system and for avoiding the likelihood of foul air entering a building must comply with Tas Part H101, using products authorised under the WaterMark Certification Scheme or Tas Part I101 (as appropriate).
- (3) A design and installation method for disposing of sewage using a non-flushing sanitary fixture, and for avoiding the likelihood of foul air entering a building must comply with Tas Part C101, using products authorised under the WaterMark Certification Scheme or Tas Part I101 (as appropriate).

Schedule 1 Definitions

Early childhood centre: Any premises or part thereof providing or intending to provide a centre-based education and care service within the meaning of the Education and Care Services National Law Act 2010 (Vic), the Education and Care Services National Regulations and centre-based services that are licensed or approved under State and Territory children's services law, but excludes—

- (a) education and care primarily provided to school aged children in outside school hours settings; and
- (b) services licensed as *centre-based care class 4* under the Child Care Act.

Expert Judgement: For Volume Three, the judgement of a person who has the qualifications and expertise to determine whether a *Plumbing or Drainage Solution* complies with the *Performance Requirements*.

Explanatory Information:

The level of qualification and/or experience required to determine whether a *Plumbing or Drainage Solution* complies with the *Performance Requirements* may differ depending on the degree of complexity and the requirements of the Tasmanian Building Act. Practitioners should seek advice from the *Permit Authority*.

Network Utility Operator: A person who—

- (a) undertakes the piped distribution of *drinking water* or *non-drinking water* for supply; or
- (b) is the operator of a sewerage system or a stormwater *drainage* system.

On-site wastewater management system: An on-site wastewater management system as defined by the Tasmanian Building Act.

Professional engineer: A person who is an engineer accredited under the Tasmanian Building Act in the relevant discipline who has appropriate experience and competence in the relevant field.

Recognised expert: A person with qualifications and experience in the area of *plumbing* or *drainage* in question, as determined by the Director of Building Control.

TAS Footnote: Other legislation affecting buildings

All legislative technical requirements affecting the design, construction or performance of *plumbing* installations are consolidated into the Tasmanian Building Act and other legislative instruments under that Act by the adoption of all Parts of the National Construction Code.

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Schedule 10

Victoria

Introduction

Section B

Water services

Part B1	Cold water services
VIC B1D4	General requirements
Part B2	Heated water services
B2P7	Energy use and source
VIC B2V1	Greenhouse gas intensity of a water heater
B2D9	Design, construction and installation General requirements
Part B3	Non-drinking water services
VIC B3D3	General requirements
Part B4	Fire-fighting water services
B4D2	General requirements

Section C

Sanitary plumbing and drainage systems

Part C1	Sanitary plumbing systems
VIC C1D3	General requirements
Part C2	Sanitary drainage systems
VIC C2P3	No point of connection
VIC C2V1	Velocity and liquid-to-air ratio
VIC C2V2	Pressure testing
VIC C2D4	General requirements

Section D

Excessive noise

Part D1	Excessive noise
VIC D1P1	Undue noise
VIC D1P2	Excessive noise
D1D1	Deemed-to-Satisfy Provisions

Schedule 1

Definitions

Footnote: Other legislation affecting buildings

VIC Introduction

This Appendix contains variations and additions to the Building Code of Australia (BCA) provisions which are considered necessary for the effective application of the Code in Victoria and shall be treated as amendments to the Code.

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Section B Water services

Part B1 Cold water services

Insert clause VIC B1D4 as follows:

VIC B1D4 General requirements

[2019: VIC B1.4(1), (2) and (3)]

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of cold water services must be in accordance with AS/NZS 3500.1.
- (2) *Drinking water* that is not intentionally heated must be delivered at a temperature of less than 40°C.
- (3) A hose tap must be provided in men's public toilets adjacent to the urinals.

Part B2 Heated water services

B2P7 Energy use and source

[2019: BP2.6]

Delete B2P7(1) and replace with VIC B2P7(1) as follows:

- (1) A solar water heater system installed in a new Class 1 building must comply with the Plumbing Regulations 2018.
- (2)
- (3)

Delete B2V1 and insert VIC B2V1 as follows:

VIC B2V1 Greenhouse gas intensity of a water heater

This clause has deliberately been left blank.

B2D9 Design, construction and installation ~~General requirements~~

[2019: B2.9]

Delete B2D9(1) and replace with VIC B2D9(1) as follows:

- (1) ~~The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with AS/NZS 3500.4 including the following additions:~~
 - (a) ~~Insert the following after clause 1.11.2: This clause does not apply to the replacement of a heated water unit in the same location, where the original installation did not require a temperature control device.~~
 - (b) ~~Insert the following after clause 4.2.2.4: The provisions of clause 5.2.8 of AS/NZS 3500.1 apply to heated water reticulation.~~

Part B3 Non-drinking water services

Insert clause VIC B3D3 as follows:

VIC B3D3 General requirements

[2019: VIC B3.3]

The design, construction, installation, replacement, repair, alteration and maintenance of a *non-drinking water* service must be in accordance with AS/NZS 3500.1, subject to the following:

- (a) Substitute the text of clause 9.7.1(a) as follows: be of a type that has a removable handle.
- (b) Substitute the text of clause 9.7.1(c) as follows: have a non-standard inlet connecting thread and a standard hose connection outlet.

Explanatory Information:

Requirements for the design, construction, installation, replacement, repair, alteration and maintenance of a *non-drinking water* service used for fire-fighting purposes are contained in [Part B4](#).

Part B4 Fire-fighting water services

B4D2 General requirements

[2019: B4.2]

Delete B4D2(2) and replace with VIC B4D2(2) as follows:

~~(2) The installation of a fire fighting water service must be in accordance with AS/NZS 3500.1.~~

Insert subclause VIC B4D2(3) in clause B4D2 as follows:

(3) When installed in class 1 or class 10 buildings and structures, an automatic fire sprinkler system must be in accordance with AS 2118.1, AS 2118.4, AS 2118.5, FPAA101D or FPAA101H as appropriate.

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Section C Sanitary plumbing and drainage systems

Part C1 Sanitary plumbing systems

Insert clause VIC C1D3 as follows:

VIC C1D3 General requirements

[2019: VIC C1.3]

The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *plumbing* system must be in accordance with AS/NZS 3500.2 with the following variations and additions:

- (a) After clause 13.9(b), delete the following: Where a bath trap is not accessible, the bath shall discharge untrapped to a floor waste gully (FWG) in accordance with Table 4.6.7.2 and Appendix B.
- (b) After clause 15.1, insert clause 15.1A as follows: When tested, the respective sections of any soil pipe, waste pipe, vent pipe or above-ground drain must be free of leaks when subjected to an air test in accordance with clause 15.3.
- (c) Substitute clause 15.3.3 as follows: When tested, the respective sections of any soil pipe, waste pipe, vent pipe or above ground drain must be free of leaks when subjected to an air test in accordance with clause 15.3.2 over the minimum test duration specified in Table 15.3.2.

Part C2 Sanitary drainage systems

Insert clause VIC C2P3 as follows:

VIC C2P3 No point of connection

[2019: VIC CP2.101]

Where a *point of connection* to a *Network Utility Operator's* sewerage system is not available, an *on-site wastewater management system* must be designed, installed and maintained in accordance with the requirements and agreement of the relevant authority having jurisdiction.

Insert clause VIC C2V1 as follows:

VIC C2V1 Velocity and liquid-to-air ratio

[2019: VIC CV2.1]

Compliance with C2P1(2)(a) is achieved if the sanitary *drainage* system passes one or more of the pressure tests set out in Section 15 of AS/NZS 3500.2 and is designed to operate with—

- (a) a liquid-to-air ratio of between 1:1 and 0.65:0.35; and
- (b) a minimum velocity of 0.8 m/s; and
- (c) a maximum velocity of—
 - (i) 2 m/s under normal operating conditions; and
 - (ii) 3.5 m/s under surge conditions.

Delete C2V2 and insert VIC C2V2 as follows:

VIC C2V2 Pressure testing

This clause has deliberately been left blank.

Insert clause VIC C2D4 as follows:

VIC C2D4 General requirements

[2019: VIC C2.4(1) to (5)]

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *drainage* system must be in accordance with AS/NZS 3500.2 with the following variations and additions:
 - (a) Substitute clause 5.3(c) as follows: under all bends greater than DN 65 forming risers from the drain.
 - (b) After clause 15.1, insert clause 15.1A as follows: Testing of a sanitary drainage installation—
 - (i) if installed at a property provided with non-drinking water by the Network Utility Operator, may be carried out in accordance with—
 - (A) a water test using non-drinking water provided by the Network Utility Operator in accordance with clause 15.2; or
 - (B) an air test in accordance with clause 15.3; or
 - (C) a vacuum test in accordance with clause 15.4; or
 - (ii) in cases other than in (a), testing may be carried out by way of—
 - (A) an air test in accordance with clause 15.3; or
 - (B) a vacuum test in accordance with clause 15.4.
 - (c) After clause 5.4.2(d), insert (d) as follows: Free running sand, excavated from the trench, capable of passing through a 2 mm mesh sieve, which does not contain clay, organic or any other deleterious materials, where used in permeable soil conditions where ground water or surface water entering the trench does not disturb the sand.
- (2) If an inspection shaft or boundary trap riser in a below ground sanitary *drainage* system is located clear of a building and is not likely to be damaged by vehicular traffic, a light cover must be installed in accordance with clause 4.4.2.1(a) and clause 4.4.2.1(c)(ii) and (iii) of AS/NZS 3500.2.
- (3) Discharge pipes measuring DN 50 or smaller must not be installed in a below ground sanitary *drainage* system, except for discharge pipes connected to floor waste gullies.
- (4) Risers from gullies shall be installed vertically with no offsets.
- (5) Where there is no *point of connection* to a *Network Utility Operator's* sewerage system, the design, construction, installation, replacement, repair, alteration and maintenance of a wastewater treatment system must be in accordance with AS/NZS 1546.1, AS/NZS 1546.2, AS/NZS 1546.3 or AS/NZS 1547 as appropriate.

Section D Excessive noise

Part D1 Excessive noise

Insert clause VIC D1P1 as follows:

VIC D1P1 Undue noise

[2019: VIC DP1.1]

- (1) *Plumbing* and *drainage* systems must be designed, constructed and installed in a manner that does not create undue noise.
- (2) Sanitary *plumbing* and *drainage* systems must convey sewage or sullage to a sanitary *drainage* system or an *approved disposal system* in a manner that does not create undue noise.
- (3) The *required* sound insulation of a floor or wall must not be compromised by the incorporation or penetration of a *plumbing* or *drainage* system.

Delete D1P2 and insert VIC D1P2 as follows:

VIC D1P2 Excessive noise

This clause has deliberately been left blank.

D1D1 Deemed-to-Satisfy Provisions

[2019: D1.1]

Delete D1D1(1) and replace with VIC D1D1(1) as follows:

- (1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirement D1P1* is satisfied by complying with D1D2 and D1D3.

Schedule 1 Definitions

Early childhood centre: Includes—

- (a) any premises, or part thereof, providing or intending to provide a centre-based education and care service within the meaning of the Education and Care Services National Law Act 2010, and the Education and Care Services National Regulations, excluding a service where education and care is primarily provided to school aged children; and
- (b) a *children's service*.

Flood hazard area: The *site* (whether or not mapped) encompassing land in an area liable to flooding within the meaning of Regulation 153 of the Building Regulations 2018.

Freeboard: The minimum height of the lowest floor of the building above the *defined flood level*, regulated by the relevant planning scheme, or specified or otherwise determined by the relevant council under Regulation 153 of the Building Regulations 2018 (see Figure 3).

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VIC Footnote: Other legislation affecting buildings

In addition to this Code, there are a number of other legislative technical requirements affecting the design, construction, installation, replacement, repair, alteration and maintenance of plumbing that practitioners may need to be aware of, including, but not necessarily limited to, the following list. Additional legislative instruments such as regulations, codes, and standards may exist under the legislation listed.

1. Relevant Legislation

Building Act 1993

Plumbing Regulations 2018

Gas Safety Act 1997

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Schedule 11

Western Australia

Introduction

Footnote: Other legislation affecting buildings

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WA Introduction

This Appendix contains variations and additions to the Building Code of Australia (BCA) provisions which are considered necessary for the effective application of the Code in Western Australia.

These additional provisions are a consolidation of existing building related requirements from the Health (Public Building) Regulations 1992 into the Western Australian Appendix of the BCA.

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WA Footnote: Other legislation affecting buildings

In addition to any applicable provisions of the Plumbers Licensing and Plumbing Standards Regulations 2000, Plumbers Licensing Act 1995, the Building Act 2004 and this code, there are a number of other legislative technical requirements affecting the design, construction, installation, replacement, repair, alteration and maintenance of a plumbing system that practitioners may need to be aware of, including, but not limited to, the following list. Additional legislative instruments such as regulation, codes and standards may exist under the legislation listed.

1. Planning

Administering Agency

Western Australian Planning Commission

Relevant Legislation

Planning and Development Act 2005

2. Building

Administering Agency

Building Commission

Relevant Legislation

Building Act 2010

3. Health

Administering Agency

Department of Health

Relevant Legislation

Health Act 1911

4. Child Care

Administering Agency

Department of Communities

Relevant Legislation

Child Care Services Act 2006

5. Gas Installations

Administering Agency

Energy Safety

Relevant Legislation

Gas Standards Act 1972

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6. Environment

Administering Agency

Environment Protection Authority

Relevant Legislation

Environment Protection Act 1986

7. Electrical Installations

Administering Agency

Energy Safety

Relevant Legislation

Electricity Act 1945

8. Water Resource

Administering Agency

Department of Water

Relevant Legislation

Water Services Act 2012

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