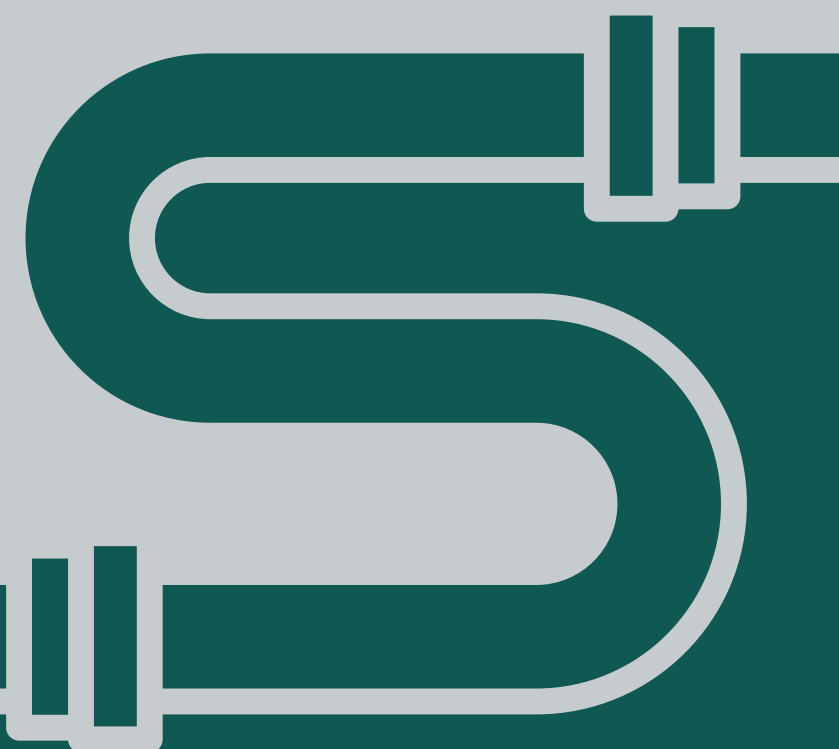




Volume Three



Plumbing Code of Australia
2019

PREVIEW

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Introduction to the National Construction Code (NCC)

Introduction to NCC Volume Three

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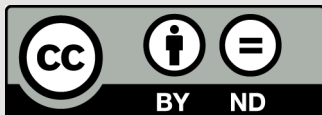
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Introduction to the National Construction Code (NCC)

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:

1. Administrative requirements contained within the Governing Requirements.
2. 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 resources

The NCC has resources created to make the code easier to understand and apply. These resources are available from the ABCB website at: www.abcb.gov.au.

Preview

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 –
 - State and Territory Appendices
 - Abbreviation and symbols
 - NCC defined terms
 - Referenced documents
 - Fire-resistance of building elements
 - Fire hazard properties
 - Fire Safety Verification Method.

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.

Governing Requirements

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Section A Governing Requirements

Section A Governing Requirements of the NCC

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Preview

Section A Governing Requirements of the NCC

Introduction to this Section

The Governing Requirements of the NCC provide the rules and instructions for using and complying with the NCC. They include the following:

- Interpreting the NCC.
- Complying with the NCC.
- Application of the NCC in States and Territories.
- Applying documents referenced in the NCC.
- Documenting the suitability of the design, construction and/or use of materials to comply with the NCC.
- Classifying buildings by their characteristics and intended use.

Preview

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 in understanding the intended technical and legal meaning of the NCC. This Part also explains the difference between the mandatory parts of the NCC and parts that are only explanatory or guidance in nature.

A1.0 Interpretation

- (1) The following components of the NCC are non-mandatory and informative:
 - (a) Content identified as “explanatory information”.
 - (b) For **Volumes One and Two**, the “Introduction to this Part or Section” information, located at the beginning of each Part or Section.
 - (c) For **Volume Three**, the “Introduction to this Section” information, located at the beginning of each Section.
- (2) Words in italics must be interpreted in accordance with—
 - (a) definitions provided in [Schedule 3](#), unless the contrary intention appears; and
 - (b) additional definitions in State or Territory appendices, as appropriate.

Note:

For **Volume Three**, if a word is not defined in [Schedule 3](#), the meaning (if any) attributed to it under AS/NZS 3500.0 Glossary of Terms should be used unless the contrary intention appears.

- (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 a [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) For **Volume Three** the “Introduction to this Part” information, located at the beginning of each Part, is mandatory and is provided to specify where each Part applies.
 - (e) An “Application” statement is mandatory and is provided to specify where and when a requirement or provision applies.
 - (f) 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.
 - (g) An “Exemption” statement is mandatory and is provided to specify where or when a requirement or provision does not need to be complied with.
 - (h) A “Note” is part of a provision or requirement and provides additional mandatory instructions.
 - (i) Figures in the NCC are used to illustrate specific issues referenced in the associated text. They are not to be construed as containing all design information that is [required](#) for that particular building element or situation.
 - (j) The defined symbols and abbreviations listed in [Schedule 2](#).
- (4) A reference to a building class is understood to be 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 A1.0\(7\)](#)

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 non-mandatory and are 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.

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.

A2.0 Compliance

Compliance with the NCC is achieved by complying with—

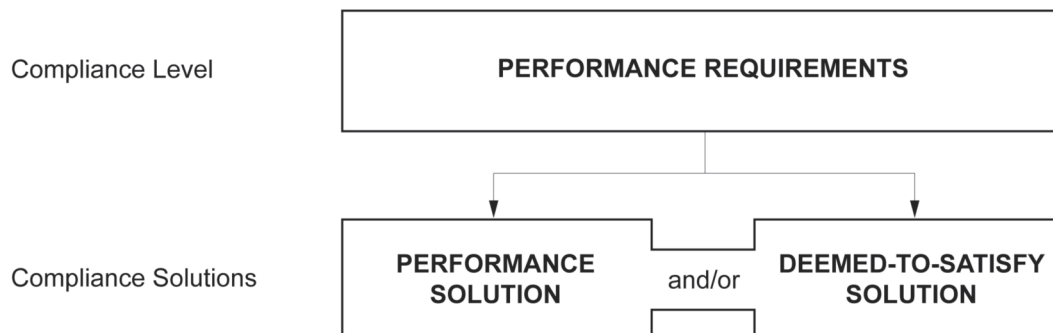
- (1) the Governing Requirements of the NCC; and
- (2) the *Performance Requirements*.

A2.1 Compliance with the Performance Requirements

Performance Requirements are satisfied by one of the following, as shown in Figure 1:

- (1) A *Performance Solution*.
- (2) A *Deemed-to-Satisfy Solution*.
- (3) A combination of (1) and (2).

Figure 1: NCC compliance option structure



A2.2 Performance Solution

- (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

Governing Requirements

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*.

A2.3 Deemed-to-Satisfy Solution

- (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*.
- (3) For **Volume Two**:
 - (a) Where an acceptable construction manual and an acceptable construction practice contained in the same Part are considered to satisfy the same component of a *Performance Requirement*, in order to comply with the *Deemed-to-Satisfy Provisions* it is only necessary to satisfy—
 - (i) the appropriate acceptable construction manual; or
 - (ii) the appropriate acceptable construction practice.
 - (b) Where an acceptable construction manual and an acceptable construction practice contained in the same Part are deemed to satisfy different components of a *Performance Requirement*, compliance with the *Deemed-to-Satisfy Provisions* may require satisfying both the listed acceptable construction manual and the acceptable construction practice for their specific components unless otherwise stated.

A2.4 A combination of solutions

- (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) *A2.2* for assessment against the relevant *Performance Requirements*.
 - (b) *A2.3* 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 the *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*

Governing Requirements

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.

A2.2(2)(b)(ii) provides for the use of *Verification Methods* that are not listed in the NCC. A *Verification Method* may include—

1. a calculation, using analytical methods or mathematical models; or
2. 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
3. an inspection (and inspection report); or
4. 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*.

In Section 3 of Volume Two the *Deemed-to-Satisfy Provisions* are divided into two compliance pathways: “acceptable construction practices” and “acceptable construction manuals”:

- “Acceptable construction practices” are some of the most common forms of national construction practices and are written into Section 3.
- “Acceptable construction manuals” are the deemed-to-satisfy referenced documents.

In general, either an “acceptable construction practice” or an “acceptable construction manual” may be used as options when proposing a *Deemed-to-Satisfy Solution*.

Acceptable construction practices are *Deemed-to-Satisfy Provisions* that are considered to meet the legislative requirements for Class 1 and Class 10 buildings.

There is no obligation to adopt any particular option contained in the acceptable construction practices, if it is preferred to meet the *Performance Requirement* in some other way.

However, if one of the options described in these provisions is not complied with, then the *appropriate authority* must be satisfied that the *Performance Requirements* have been met.

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

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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*. A2.2(3) and A2.4(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.

Preview

Part A3 State or Territory compliance and the NCC

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 and Territory building and plumbing legislation.

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

A3.0 State and Territory compliance

- (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 1 to 3 and associated schedules of Volume Two; and
 - (c) Sections A to E and associated schedules of Volume Three.
- (2) State or 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) For Volumes One and Three, State and Territory variations, additions and deletions are contained in [Schedule 1](#).
- (5) For Volume Two, State and Territory variations, additions and deletions are contained throughout the Volume and in [Schedule 1](#).
- (6) 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. [A3.0\(2\)](#) 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 [Schedule 1](#) 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 these 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 4](#) 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.

A4.0 Referenced documents

- (1) A reference in the NCC to a document refers to the edition or issue and any amendment listed in [Schedule 4](#).
- (2) A document referenced in the NCC is only applicable in the context in which the document is quoted.

[Volume Three](#) *Tas A4.0(3)*

- (3) Where a new edition, issue or amendment of a primary referenced document is not listed under [Schedule 4](#), the new edition, issue or amendment is not referenced for the purposes 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.

Exemption 1:

If the secondary or other referenced document is also a primary referenced document, [A4.0\(5\)](#) does not apply.

A4.1 Differences between referenced documents and the NCC

The NCC overrules any difference between the NCC and a primary referenced document, including any secondary referenced document.

Exemption 1:

[A4.1](#) does not apply to acceptable construction manuals when used in their entirety to comply with requirements of the NCC unless otherwise stated.

A4.2 Adoption of referenced documents

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

- (1) The rights, responsibilities or obligations between the manufacturer, supplier or purchaser.
- (2) The responsibilities of any trades person or other building operative, architect, engineer, authority, or other person or body.
- (3) 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.
- (4) The submission of a material, product, form of construction or design to any person, authority or body for an opinion.
- (5) 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.

Explanatory information:

[Schedule 4](#) is only mandatory to [Deemed-to-Satisfy Provisions](#), [Verification Methods](#) and [Schedules 3, 5 and 6](#). 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 4](#).

[Schedule 4](#) lists the specific edition of the Standard or other document adopted, including any amendments considered appropriate for [Schedule 3](#), the [Deemed-to-Satisfy Provisions](#) 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. [A4.0\(5\)](#) 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 [A4.0 Exemption 1](#), that edition (or amendment) is not adopted for the purposes of the primary referenced document.

[A4.2](#) 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.

Preview

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.

A5.0 Suitability

- (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) [A5.1](#); and
 - (ii) [A5.2](#) or [A5.3](#) as appropriate; and
 - (b) constructed or installed in an appropriate manner.

A5.1 Evidence of suitability—Volumes One, Two and Three

- (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.

A5.2 Evidence of suitability—Volumes One and Two

Application 1:

[A5.2](#) is only applicable to the BCA.

- (1) Subject to [A5.4](#), [A5.5](#) and [A5.6](#), 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.

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- (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.

A5.3 Evidence of suitability—Volume Three

Application 1:

A5.3 is only applicable to the PCA.

- (1) 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—

Tas A5.3(1)(a)

- (a) a test report provided by a *certification body* or *Accredited Testing Laboratory*, in accordance with AS/NZS 4020; or
- (b) a *WaterMark Licence* issued in accordance with (2), if it includes compliance with AS/NZS 4020.

Tas A5.3(1)(c)

- (2) 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.
- (3) 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

Tas A5.3(3)(b)

- (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.
- (4) Any *product* that is not covered by (2) or (3) must be subjected to a risk assessment in accordance with the WaterMark Scheme Rules.

Tas A5.3(401)

- (5) 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.

Tas A5.3(5)(b)(iii)

- (6) Any other form of documentary evidence that—
- (a) demonstrates that a design or system complies with the relevant requirements of the PCA; and
 - (b) 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 A5.3(7), (8), (9), (10)***A5.4 Fire-resistance of building elements**

Where a *Deemed-to-Satisfy Provision* requires a building element to have an FRL, it must be determined in accordance with [Schedule 5](#).

A5.5 Fire hazard properties

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

- (1) For *average specific extinction area*, *critical radiant flux* and *Flammability Index*, as defined in [Schedule 3](#).
- (2) For *Smoke-Developed Index* and *Spread-of-Flame Index*, in accordance with [Schedule 6](#).
- (3) For a material's *group number* or *smoke growth rate index* (SMOGR_{RC}), in accordance with [Clause 4\(b\)](#) of [Specification C1.10](#).

A5.6 Resistance to the incipient spread of fire

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

- (1) 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—
 - (a) describes the method and conditions of the test and form of construction of the tested prototype in full; and
 - (b) certifies that the application of restraint to the prototype complies with the *Standard Fire Test*; or
- (2) it differs in only a minor degree from a prototype tested under (1) and the *resistance to the incipient spread of fire* attributed to the ceiling is confirmed in a report from an *Accredited Testing Laboratory* that—
 - (a) 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
 - (b) describes the materials, construction and conditions of restraint that are necessary to achieve the *resistance to the incipient spread of fire*.

*ACT Appendix***Explanatory information:**

[A5.0](#) 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 skillfully in accordance with good trade practice; and
- all materials must be of a quality to fulfil their function/s within the building.

[A5.0](#) only applies to matters normally covered by the NCC.

While [A5.0](#) 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.

Example

Permit authorities would ordinarily not apply [A5.0](#) 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

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construction. The requirement to consider appropriateness of the evidence is specified in [A5.1\(1\)](#).

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.

[A5.2](#) 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.

[A5.2\(1\)\(f\)](#) allows for the use of alternative forms of documentary evidence to those included in [A5.2\(1\)\(a\)](#) 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 [A5.2\(1\)\(f\)](#).

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, [A5.2\(2\)](#) 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.

[A5.3\(1\)](#) 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 [A5.3\(1\)](#), under which there are two options. The first, at [A5.3\(1\)\(a\)](#), recognises test reports and certificates that cover compliance with AS/NZS 4020 only. The second, at [A5.3\(1\)\(b\)](#), 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](#), [A5.3\(2\)](#) 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 [A5.3\(3\)](#). This may include demonstrating compliance with a [product](#) specification referenced in the [WaterMark Schedule of Excluded Products](#), where one is available.

[A5.3\(4\)](#) 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](#).

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.

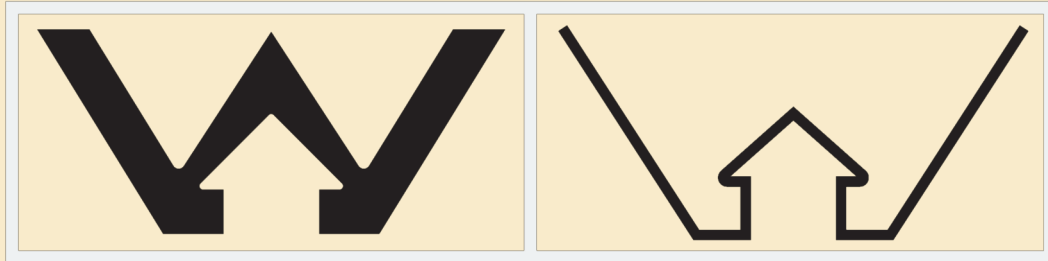
When a [product](#) is listed on the [WaterMark Schedule of Products](#) then, for it to be certified and authorised, the [product](#) must—

- 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

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- 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 below, that must be displayed on the *product* upon granting of a *WaterMark Licence*.



If under a *Deemed-to-Satisfy Provision* a building element is *required* to have an FRL, then A5.2 may be used to provide evidence to show that the FRL has been determined in accordance with *Schedule 5*.

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 A5.2 may be used to provide evidence to support the proposal and show that the *fire hazard properties* have been determined in accordance with A5.5.

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. A5.6 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*.

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 buildings 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.

A6.0 Determining a building classification

- (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.

Exemption 1:

For [A6.0\(1\)](#) 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](#).

Limitation 1:

Exemption 1 does not apply where the minor use of a building is a laboratory or a Class 2, 3 or 4 part of a building.

- (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.

Exemption 2:

[A6.0\(3\)](#) does not apply to an [electricity network substation](#).

- (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.

A6.1 Class 1 buildings

A Class 1 building includes one or more of the following sub-classifications:

- (1) Class 1a is one or more buildings, which together form a single dwelling including the following:
 - (a) A detached house.
 - (b) 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.
- (2) Class 1b is one or more buildings which together constitute—
 - (a) a boarding house, guest house, hostel or the like that—
 - (i) would ordinarily accommodate not more than 12 people; and
 - (ii) have a total area of all floors not more than 300 m² (measured over the enclosing walls of the building or buildings); or
 - (b) four or more single dwellings located on one allotment and used for short-term holiday accommodation.

Limitation 1:

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For A6.1, a Class 1 building cannot be located above or below another dwelling or another Class of building, other than a *private garage*.

See Figures 1, 2 and 3.

Figure 1: Identification of Class 1 buildings

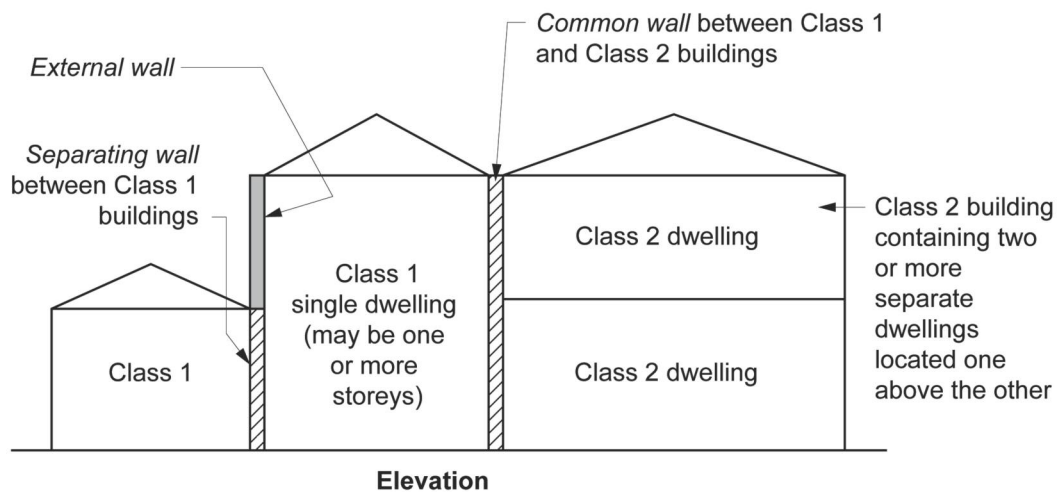
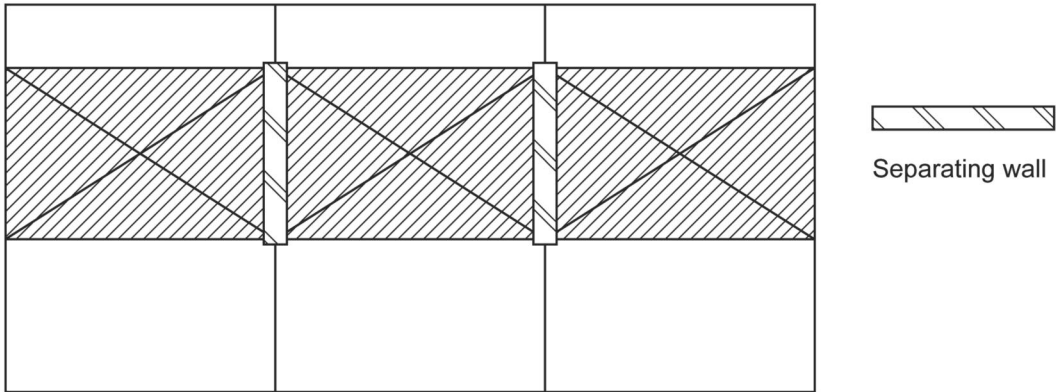
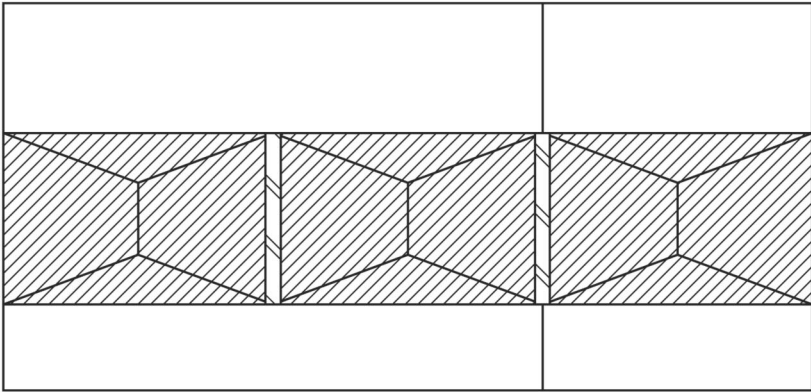


Figure 2: Typical Class 1 building configurations



(a) 3 Class 1 buildings
on 3 separate allotments

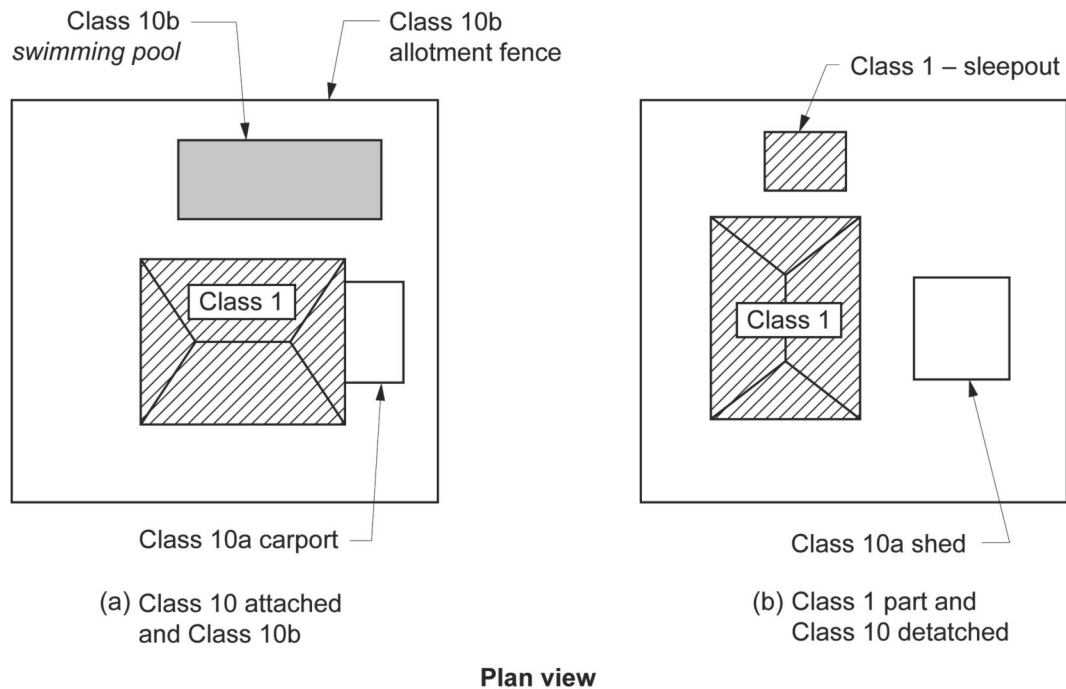


(b) 3 Class 1 buildings
on 2 separate allotments

Plan view



Figure 3: Domestic allotment – Classification of buildings and structures



A6.2 Class 2 buildings

- (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 is a separate dwelling.

A6.3 Class 3 buildings

A Class 3 building is a residential building providing long-term or transient accommodation for a number of unrelated persons, including the following:

- (1) A boarding house, guest house, hostel, lodging house or backpacker accommodation.
- (2) A residential part of a hotel or motel.
- (3) A residential part of a [school](#).
- (4) Accommodation for the aged, children, or people with disability.
- (5) A residential part of a [health-care building](#) which accommodates members of staff.
- (6) A residential part of a [detention centre](#).
- (7) A [residential care building](#).

Limitation 1:

For [A6.3](#), a Class 3 building is not a Class 1 or 2 residential building. However, a building could be a mixture of Class 3 and another Class.

A6.4 Class 4 buildings

Class 4 is a dwelling in a Class 5, 6, 7, 8 or 9 building.

Application 1:

[A6.4](#) only applies if it is the only dwelling in the building.

A6.5 Class 5 buildings

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

NSW Class 6

SA Class 6

A6.6 Class 6 buildings

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, including—

- (1) an eating room, café, restaurant, milk or soft-drink bar; or
- (2) a dining room, bar area that is not an [assembly building](#), shop or kiosk part of a hotel or motel; or
- (3) a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
- (4) a market or sale room, showroom, or [service station](#).

A6.7 Class 7 buildings

A Class 7 building is a storage-type building that includes one or more of the following sub-classifications:

- (1) Class 7a — a [carpark](#).
- (2) Class 7b — a building that is used for storage, or display of goods or produce for sale by wholesale.

A6.8 Class 8 buildings

A Class 8 building is a process-type building that includes the following:

- (1) A laboratory.
- (2) A building in which the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce for sale takes place.

A6.9 Class 9 buildings

A Class 9 building is a building of a public nature that includes one or more of the following sub-classifications:

- (1) 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](#).
- (2) Class 9b — an [assembly building](#) including a trade workshop or laboratory in a primary or secondary [school](#).

Exemption 1:

[A6.9\(2\)](#) excludes any parts of the building that are of another Class.

- (3) Class 9c — a [residential care building](#).

A6.10 Class 10 buildings and structures

A Class 10 building includes one or more of the following sub-classifications:

- (1) Class 10a is a non-habitable building including a [private garage](#), carport, shed or the like.
- (2) Class 10b is a structure that is a fence, mast, antenna, retaining wall or free-standing wall or [swimming pool](#) or the like.
- (3) Class 10c is a [private bushfire shelter](#).

See [Figure 3](#).

A6.11 Multiple classifications

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

Application 1:

For [A6.11](#), 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).

Governing Requirements

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 [A6.0 Exemption 1](#), 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. 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 [A6.0 Exemption 1](#) is used, it should be remembered that it will still be necessary to use the occupant numbers in Volume One [Table D1.13](#) 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 [A6.0\(3\)](#) 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 [C2.13](#) with regard to elements of the electricity supply system).

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.

Governing Requirements

Unlike a Class 1b building described in [A6.1\(2\)\(a\)](#), a Class 1b building described in [A6.1\(2\)\(b\)](#) 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 [Table D3.1](#) which contains an explanation of what is considered be “one allotment”.

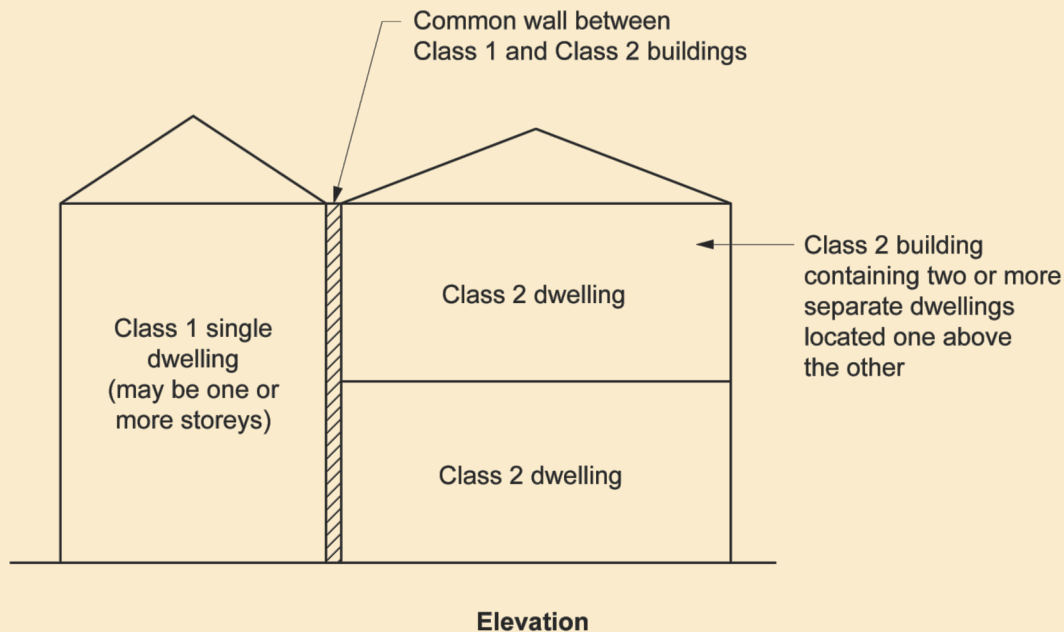
The Class 1b classification can attract concessions applicable to Class 3 buildings. These concessions allow people to rent out rooms in a house, or run a bed and breakfast, without having to comply with the more stringent Class 3 requirements. The reasoning is that the smaller size of the building and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

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 [Figure 4](#) for a typical configuration of Class 1 and Class 2 buildings.

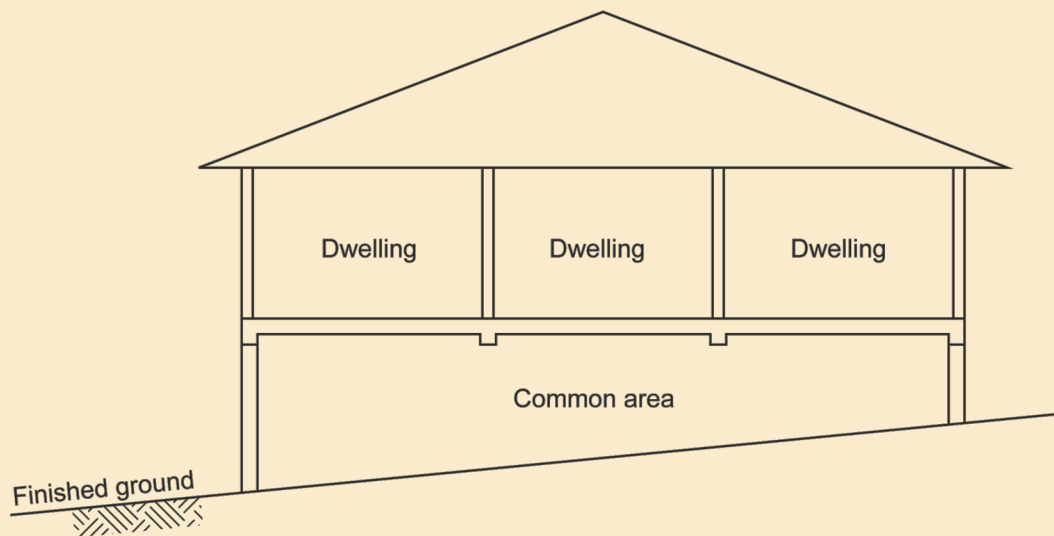
Figure 4: Section showing a typical configuration of Class 1 and Class 2 buildings (with non-combustible roof coverings)



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 [Figure 5](#)).

Figure 5: Elevation showing a single storey of Class 2 with a common area below



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.

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.

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.

Governing Requirements

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

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.

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).

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 [A6.6](#) as Class 6 buildings); and
- potteries; and
- food manufacturers (but not restaurants, which are specifically included in [A6.6](#) as Class 6 buildings); and
- buildings used for the packing or processing of produce, such as a farm or horticultural building.

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.

Class 9b buildings are [assembly buildings](#). These buildings can include—

- 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 [A6.9\(2\) Exemption 1](#), 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 [A6.0 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](#).

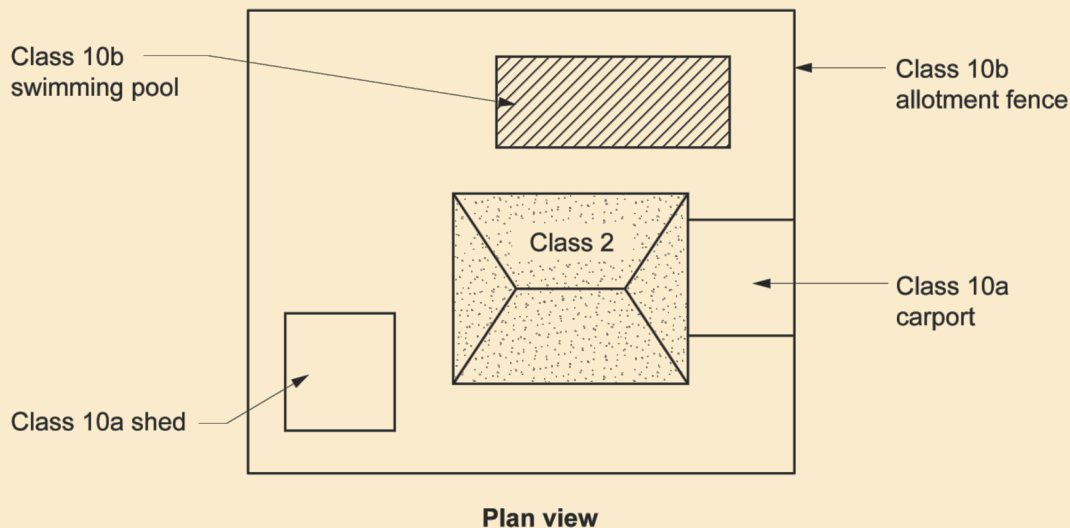
Governing Requirements

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.

Class 10a buildings are non-habitable buildings. See [Figure 6](#) for an indication of some Class 10 building configurations.

Figure 6: Examples of Class 10 buildings and structures



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 shelters](#) 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.

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.

Class 6 or Class 7?

Governing Requirements

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.

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 A6.11).

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 H3 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 H3 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 [A6.11](#) 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 [A6.11 Application 1](#) where a building has more than one classification the more stringent Class requirements will apply.

Preview

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 if a single building.

A7.0 United buildings

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

Application 1:

For [A7.0](#), 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.

Application 2:

[A7.0](#) only applies to Class 2 to 9 buildings.

A7.1 Alterations in a united building

If, after [alterations](#) or any other building work, two or more of the buildings in [A7.0](#) 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.

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.

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.

Water Services

- | | |
|----------------|-------------------------------------|
| Part B1 | Cold water services |
| Part B2 | Heated water services |
| Part B3 | Non-drinking water services |
| Part B4 | Fire-fighting water services |
| Part B5 | Cross-connection control |
| Part B6 | Rainwater harvesting and use |

Section B Water Services

Part B1 Cold water services

- BP1.1 Water supply
- BP1.2 Design, construction and installation
- B1.1 Application
- B1.2 Sanitary flushing
- B1.3 Maximum flow rate for cold water outlets
- B1.4 General requirements

Part B2 Heated water services

- BP2.1 Water supply
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- BP2.5 Legionella control
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- BV2.1 Greenhouse gas intensity of a water heater
- BV2.2 Heated water storage temperature
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- B2.2 Water heater in a heated water supply system
- B2.3 Layout of taps
- B2.4 Maximum flow rates for heated water outlets
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- B2.7 Heated water storage
- B2.8 Legionella control
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Part B3 Non-drinking water services

- BP3.1 Water supply
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- B3.1 Application
- B3.2 Distribution of non-drinking water
- B3.3 General requirements

Part B4 Fire-fighting water services

- BP4.1 Design, construction and installation
- B4.1 Application
- B4.2 General requirements

Part B5 Cross-connection control

- BP5.1 Contamination control
- B5.1 Application
- B5.2 Drinking water service
- B5.3 Non-drinking water service
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- BS5.1.2 Application
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- BS5.1.4 Individual protection
- BS5.1.5 Zone protection

- BS5.1.6 Containment protection
- BS5.1.7 Fire-fighting water services

Part B6 Rainwater harvesting and use

- BP6.1 Stored rainwater
- BP6.2 Rainwater harvesting system installation
- BP6.3 Rainwater service
- BP6.4 Identification
- B6.1 Application
- B6.2 Collection of rainwater
- B6.3 Top-up lines
- B6.4 Buried and partially buried tanks
- B6.5 Rainwater pipework and outlets

Preview

Part B1 Cold water services

Tas Introduction to this Part

Vic Introduction to this Part

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 cold 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.

This part also applies to a cold water service connected to a *rainwater harvesting system*.

Explanatory information:

OBJECTIVE

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

BF1.1

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

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.

Performance Requirements

BP1.1 Water supply

- (1) A cold water service must be connected to a *drinking water* supply.

Application 1:

BP1.1 only applies to cold water supplied for human consumption, food preparation, food utensil washing or personal hygiene.

BP1.2 Design, construction and installation

- (1) A cold water service must ensure 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*.
- (2) A cold water service must avoid failure or *uncontrolled discharge*.

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.

Verification Methods

There are no [Verification Methods](#) in this Part.

Deemed-to-Satisfy Provisions

B1.1 Application

- (1) [Performance Requirement BP1.1](#) 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) [Performance Requirement BP1.2](#) is satisfied by complying with [B1.2](#) to [B1.4](#).

B1.2 Sanitary flushing

[Qld B1.2\(1\)](#)

- (1) 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
 - (b) 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.

Exemption 1:

The requirements of [B1.2\(1\)](#) do not apply to a vacuum water closet pan.

- (2) The volume of water discharged to a flush urinal must not exceed 2.5 litres for each—
 - (a) single urinal stall; or
 - (b) 600 mm length of a continuous urinal wall, or part thereof.
- (3) Automatic or set-cycle cisterns must not be installed.

Explanatory information:

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.

B1.3 Maximum flow rate for cold water outlets

- (1) The outlet of a shower, basin, kitchen sink or laundry trough must have a maximum flow rate of not more than 9

litres per minute.

Explanatory information:

B1.3 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 B2.4.

Exemption 1:

The requirements of B1.3 do not apply to a shower intended to provide rapid drenching of a person for emergency purposes, such as chemical removal.

B1.4 General requirements

NSW B1.4(1)

SA B1.4(1)

Tas B1.4(1)

Vic B1.4(1)

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

SA B1.4(2)

Tas B1.4(2), (3)

Vic B1.4(2), (3)

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, the following:

| 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 | 3.1.1 Earthworks |
| Termite management for attachments to buildings and penetrations through a slab | B1 Structural provisions | 3.1.4 Termite risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire protection of separating walls and floors |
| Fixtures or fittings in a wet area | F1 Damp and weather proofing | 3.8.1 Wet areas and external waterproofing |
| Service pipework external to the building and penetrations through roof cladding in a bushfire prone area | G5 Construction in bushfire prone areas | 3.10.5 Construction in bushfire prone areas |
| Pipework sound insulation | F5 Sound transmission and insulation | 3.8.6 Sound insulation |
| Power supply to boiling and/or chilled water storage units | J6 Artificial lighting and power | Not applicable |

Tas Part B101

Part B2 Heated water services

Vic Introduction to this Part

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.

Explanatory information:

OBJECTIVE

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

BF2.1

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

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.

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.

Notes:

The greenhouse gas intensity of energy sources vary. For example, natural gas has a low greenhouse gas intensity compared with electricity generated from coal.

For the purposes of BF2.3(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

BP2.1 Water supply

- (1) A *heated water* service must be connected to a *drinking water* supply.

Application 1

BP2.1 only applies to a *heated water* service for human consumption, food preparation, food utensil washing or personal hygiene.

BP2.2 Temperature

- (1) *Heated water* supplied by a new *heated water* service must be delivered to fixtures and appliances at a temperature which is unlikely to scald.

Application 1

BP2.2 only applies to fixtures and appliances used primarily for personal hygiene.

BP2.3 Design, construction and installation

- (1) A *heated water* service must ensure the following:
 - (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*.

BP2.4 Pressure relief and temperature limitation

- (1) Containers used for producing and/or storing *heated water* must—
 - (a) relieve excessive pressure; and
 - (b) limit temperatures to avoid flash steam production in the event of rupture.

BP2.5 Legionella control

- (1) *Heated water* must be stored and delivered under conditions which avoid the likelihood of the growth of Legionella bacteria.

Qld BP2.6

Vic BP2.6

BP2.6 Energy use and source

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

Explanatory information:

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.

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.

- (2) Features in BP2.6(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.

Explanatory information:

BP2.6(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.

ACT Appendix

NSW BP2.6(3)

NT BP2.6(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:
- A source that has a greenhouse gas intensity up to and including 100 g CO₂-e/MJ of thermal energy load.
 - An on-site *renewable energy* source.
 - Another process as reclaimed energy.

Application 1

BP2.6(3) only applies to a *heated water* service in the following:

- New Class 1 buildings.
- New Class 10 buildings.

Explanatory information:

- The intent of BP2.6(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 BP2.6(2).
- For the purposes of BP2.6(3) the *renewable energy* must be on-site (not GreenPower) and includes, but is not limited to, solar, wind, hydroelectric, wave action, and geothermal.

Verification Methods

ACT Appendix

NSW BV2.1

NT BV2.1

Qld BV2.1

Vic BV2.1

BV2.1 Greenhouse gas intensity of a water heater

- Compliance with BP2.6(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.
- The annual greenhouse gas intensity of the water heater in BV2.1(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.
- The *annual greenhouse gas emissions* from each energy source in BV2.1(2) is the product of the—
 - annual amount of energy consumed from that energy source; and
 - emission factor of—
 - if the energy source is electricity, 253 g CO₂-e/MJ; or
 - if the energy source is liquefied petroleum gas, 65 g CO₂-e/MJ; or
 - if the energy source is natural gas, 61 g CO₂-e/MJ; or
 - if the energy source is wood or biomass, 4 g CO₂-e/MJ.

Explanatory information:

In BV2.1, the symbol "g CO₂-e/MJ" means "grams of Carbon Dioxide equivalent per megajoule/s".

BV2.2 Heated water storage temperature

- (1) Compliance with [BP2.5](#) 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 BV2.2](#) within 7 days before passing through the water-heating appliance's *heated water* outlet.

Table BV2.2 Heated water storage minimum exposure period

| Temperature | Minimum exposure period |
|-----------------|-------------------------|
| 70°C or greater | 1 s |
| 66°C | 2 min |
| 60°C | 32 min |

Deemed-to-Satisfy Provisions

B2.1 Application

- (1) *Performance Requirement BP2.1* 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) *Performance Requirement BP2.2* to *BP2.6* are satisfied by complying with [B2.2](#) to [B2.9](#).

[NSW B2.2](#)

[NT B2.2](#)

[Qld B2.2](#)

[SA B2.2](#)

[Vic B2.2](#)

B2.2 Water heater in a heated water supply system

- (1) In a new Class 1 or Class 10 building—

[Tas B2.2\(1\)\(a\)](#)

- (a) a water heater in a *heated water* supply system must be—
 - (i) a solar water heater complying with [B2.2\(1\)\(b\)](#); or
 - (ii) a heat pump water heater complying with [B2.2\(1\)\(b\)](#); or
 - (iii) a gas water heater complying with [B2.2\(1\)\(c\)](#); or
 - (iv) an electric resistance water heater only in the circumstances described in [B2.2\(1\)\(d\)](#); 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 14 *Small-scale Technology Certificates* for the zone where it is being installed; or
 - (B) an energy saving of not less than 40% in accordance with AS/NZS 4234 for a “small” load system; and
 - (ii) for a building with 3 or 4 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
 - (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

Explanatory information:

In colder climates the performance of some heat pumps may diminish.

- (c) a gas water heater must be rated not less than 5 stars in accordance with AS 4552; and

Tas B2.2(1)(d)

- (d) 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—
 - (i) the building has—
 - (A) not more than 1 bedroom; and
 - (B) not more than 1 electric resistance water heater installed; or
 - (ii) the building has—
 - (A) a water heater that complies with B2.2(1)(b) or B2.2(1)(c); and
 - (B) not more than 1 electric resistance water heater installed; or
 - (iii) the greenhouse gas emission intensity of the public electricity supply is low.

ACT Appendix

B2.3 Layout of taps

- (1) 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.

B2.4 Maximum flow rates for heated water outlets

- (1) The outlet of a shower, basin, kitchen sink, or laundry trough must have a maximum flow rate of not more than 9 litres per minute.

Explanatory information:

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

Exemption 1:

The requirements of B2.4 do not apply to a shower intended to provide rapid drenching of a person for emergency purposes, such as chemical removal.

B2.5 Maximum delivery temperature

- (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

NSW B2.5(1)(a)(iv)

- (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.

Tas Application 1

Qld Application 1

Application 1:

B2.5 only applies to new *heated water* installations for personal hygiene purposes.

Tas Exemption 1

B2.6 Temperature control devices

- (1) A temperature control device used to deliver *heated water* in accordance with B2.5(1)(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 B2.5(1)(b) must be a—
 - (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or

NSW B2.6(2)(d)

Tas B2.6(2)(d)

- (d) temperature limited water heater.

- (3) The *required* maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

NSW Application 1

Qld Application 1

Tas Application 1

Application 1:

B2.6 only applies to new *heated water* installations.

NSW Exemption 1

Tas Exemption 1

B2.7 Heated water storage

- (1) Containers used for producing and/or storing *heated water* must be provided with temperature and pressure relief devices in accordance with AS/NZS 3500.4.

B2.8 Legionella control

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

B2.9 General requirements

NT B2.9(1)

SA B2.9(1)

Vic B2.9(1)

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a *heated water* service must be in accordance with AS/NZS 3500.4.

Note 1:

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

- (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.

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

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heated water service. These include, but may not be limited to, the following:

| 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 | 3.1.1 Earthworks |
| Termite management for attachments to buildings and penetrations through a slab | B1 Structural provisions | 3.1.4 Termite risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire Protection of separating walls and floors |
| Fixtures or fittings in a wet area | F1 Damp and weather proofing | Part 3.8.1 Wet areas and external weatherproofing |
| Service pipework external to the building and penetrations through roof cladding in a bushfire prone area | G5 Construction in bushfire prone areas | 3.10.5 Construction in bushfire prone areas |
| Pipework sound insulation | F5 Sound Transmission and insulation | 3.8.6 Sound insulation |
| Central heating pipework | J5 Air-conditioning and ventilation systems | 3.12.5 Services |
| Pool and spa heating and pumping – energy efficiency | J7 Heated water supply and swimming pool and spa pool plant | 3.12.5 Services |
| Energy consumption monitoring for water heaters | J8 Facilities for energy monitoring | Not applicable |

Part B3 Non-drinking water services

Vic Introduction to this Part

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.

Explanatory information:

OBJECTIVE

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

BF3.1

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

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

BP3.1 Water supply

- (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.

BP3.2 Identification

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

BP3.3 Design, construction and installation

- (1) A *non-drinking water* service must ensure 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 be designed, constructed and installed to avoid *uncontrolled discharge* or failure.

Verification Methods

There are no [Verification Methods](#) in this Part.

Deemed-to-Satisfy Provisions

B3.1 Application

- (1) [Performance Requirements BP3.1](#) to [BP3.3](#) are satisfied by complying with [B3.2](#) and [B3.3](#).

B3.2 Distribution of non-drinking water

- (1) 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.

B3.3 General requirements

[NSW B3.3\(1\)](#)

[Vic B3.3\(1\)](#)

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a [non-drinking water](#) service must be in accordance with Section 9 of AS/NZS 3500.1.

Note 1:

The design, construction, installation, replacement, repair, alteration and maintenance of a [non-drinking water](#) service used for fire-fighting purposes must be in accordance with [Part B4](#).

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 [non-drinking water](#) service. These include, but may not be limited to, the following:

| 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 | 3.1.1 Earthworks |
| Termite management for attachments to buildings and penetrations through a slab | B1 Structural provisions | 3.1.4 Termite risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire protection of separating walls and floors |
| Fixtures or fittings in a wet area | F1 Damp and weatherproofing | 3.8.1 Wet areas and external weatherproofing |
| Service pipework external to the building and penetrations through roof cladding in a bushfire prone area | G5 Construction in bushfire prone areas | 3.10.5 Construction in bushfire prone areas |
| Pipework sound insulation | F5 Sound transmission and insulation | 3.8.6 Sound insulation |

Part B4 Fire-fighting water services

NSW B4

NT B4

Qld 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.

Explanatory information:

OBJECTIVE

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 STATEMENT

BF4

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

Performance Requirements

BP4.1 Design, construction and installation

- (1) A fire-fighting water service must ensure the following:
 - (a) Water is provided at *required* flow rates and pressures for the correct functioning of the fire-fighting equipment.
 - (b) Access for maintenance of mechanical components and operational controls.
 - (c) The system can be isolated for testing and maintenance.
- (2) A fire-fighting water service must avoid *uncontrolled discharge* or failure.

Verification Methods

Tas BV4.1

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

B4.1 Application

- (1) *Performance Requirement BP4.1* is satisfied by complying with *B4.2*.

B4.2 General requirements

- (1) Fire-fighting water services for Class 2 to Class 9 buildings and structures must comply with the requirements of [Part E1](#) in Volume One of the NCC.

[Vic B4.2\(2\)](#)

- (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 B4.2\(3\)](#)

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 fire-fighting water service. These include, but may not be limited to, the following:

| 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 | 3.1.1 Earthworks |
| Termite management for attachments to buildings and penetrations through a slab | B1 Structural provisions | 3.1.4 Termite risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire protection of separating walls and floors |
| Fixtures or fittings in a wet area | F1 Damp and weatherproofing | 3.8.1 Wet areas and external weatherproofing |
| Service pipework external to the building and penetrations through roof cladding in a bushfire prone area | G5 Construction in bushfire prone areas | 3.10.5 Construction in bushfire prone areas |
| Pipework sound insulation | F5 Sound transmission and insulation | 3.8.6 Sound insulation |

Part B5 Cross-connection control

Introduction to this Part

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

Explanatory information:

OBJECTIVE

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

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

BP5.1 Contamination control

- (1) Water services must be designed, constructed and installed to avoid contamination.

Application 1:

BP5.1 applies to cold water, *heated water*, *non-drinking water* and fire-fighting water services.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

B5.1 Application

- (1) *Performance Requirement BP5.1* is satisfied by complying with B5.2 to B5.4.

B5.2 Drinking water service

- (1) A hazard exists wherever it is possible for water or *contaminants* to enter a *drinking water* service or supply. This is via any potential *cross-connection* between the *drinking water* service and any of the following:
 - (a) *Non-drinking water* service.
 - (b) *Rainwater harvesting system*.
 - (c) Alternative water supply.
 - (d) *Swimming pool*.
 - (e) Pipes, fixtures or equipment (including *boilers* and pumps) containing chemicals, liquids, gases or other

Water Services

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 BS5.1.4 or BS5.1.5 of Specification B5.1; 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 BP3.1(2) covers cross-connection of a *non-drinking water* service with a *drinking water* service.

B5.3 Non-drinking water service

- (1) 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*.
- (2) Each hazard must—
 - (a) be assigned a containment *Hazard Rating* in accordance with BS5.1.6 of Specification B5.1; 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 separate sources. Therefore, each would be a 'separate *non-drinking water* service'.

B5.4 Fire-fighting water service

- (1) Each fire-fighting water service must—
 - (a) be assigned a *Hazard Rating* in accordance with BS5.1.7 of Specification B5.1; 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.

NSW B5.501

Specification B5.1 Cross-connection hazards

BS5.1.1 Scope

- (a) 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*.

BS5.1.2 Application

- (a) 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*.

Explanatory information:

The *Deemed-to-Satisfy Provisions* referred to in BS5.1.2(a) include any relevant *Deemed-to-Satisfy Provisions* set out in Parts B1, B2, B3, B4 and B6.

- (b) 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.

BS5.1.3 Protection types and Hazard Ratings

- (a) *Cross-connection* hazards within the *site* must be rated in accordance with—
- (i) **BS5.1.4**, for *individual protection* at the point of each individual hazard; or
 - (ii) **BS5.1.5**, for *zone protection* at the point where a group of hazards can be isolated.
- (b) 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 **BS5.1.6**.

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 Volume Three of the NCC. It is not intended to limit or extend the application of other regulations.

- (c) Fire-fighting water services must be rated in accordance with **BS5.1.7**.

BS5.1.4 Individual protection

- (a) The following are *Low Hazard* for the purpose of *individual protection*:
- (i) Carbonated drink dispensing machines.
 - (ii) Coils and jackets in heat exchangers, in sealed and non-toxic environments only.
 - (iii) Dental consoles.
 - (iv) Drink dispensing equipment including vending machines and coffee machines.
 - (v) *Drinking water* in reclaimed water plants.
 - (vi) External hose taps.
 - (vii) Fixtures used for ablutions including baths, bidettes, basins and showers.
 - (viii) Fixtures used for food preparation including sinks.
 - (ix) Flexible connections over domestic fixtures.
 - (x) Food preparation or food storage tanks, vats or vessels (without clean-in-place systems).

Explanatory information

A clean-in-place system allows for internal chemical cleaning to occur without the need to disassemble.

- (xi) Haemodialysis machines.
 - (xii) Hair salon basins or troughs.
 - (xiii) Hose taps located within—
 - (A) 18 m of a Type C irrigation system; or
 - (B) an area provided with *zone protection*.
 - (xiv) In-line water softeners and filters.
 - (xv) Laundry troughs.
 - (xvi) Photographic developers — water supplying rinse tanks.
 - (xvii) Photographic processing machines, without developer mixing.
 - (xviii) Steam boilers.
- (b) The following are *Medium Hazard* for the purpose of *individual protection*:
- (i) Chemical dispensers (low toxicity).

- (ii) Chlorinators.
- (iii) Coils and jackets in heat exchangers, in unsealed and toxic environments.
- (iv) Steam calorifiers.
- (c) The following are *High Hazard* for the purpose of *individual protection*:
 - (i) Antibiotic injectors (agricultural).
 - (ii) Bidets and douche hoses.
 - (iii) Chemical dispensers (high toxicity).
 - (iv) Cooling towers.
 - (v) Demineralising equipment using ion-exchange resins with acid and alkali regeneration.
 - (vi) Equipment used for handling, mixing, measuring and processing chemical and microbiological substances.
 - (vii) Fogging and cleaning sprays with chemical injection or additives.
 - (viii) Food preparation or food storage tanks, vats or vessels (with clean-in-place systems).
 - (ix) Mixing of chemicals.
 - (x) Pan washing apparatus.
 - (xi) Photographic developer mixing facilities.
 - (xii) Plants with auxiliary *non-drinking water* supplies.
 - (xiii) Portable and mobile tankers.
 - (xiv) Type D irrigation system injected with fertilisers, herbicides, nematicides, insecticides or weedicides.
 - (xv) Weed and pest spraying and water cartage tanks.

BS5.1.5 Zone protection

- (a) The following are *Low Hazard* for the purpose of *zone protection*:
 - (i) Dental and medical surgeries.
 - (ii) Fire-fighting water storage tanks.
 - (iii) Food storage tanks, vats or vessels.
 - (iv) Hair salon basins or troughs.
 - (v) Photographic laboratories.
 - (vi) Type B irrigation systems.
 - (vii) Water filtration equipment.
- (b) The following are *Medium Hazard* for the purpose of *zone protection*:
 - (i) Aircraft facilities.
 - (ii) Secondary school laboratories, including fume cupboards.
 - (iii) Type C irrigation systems.
- (c) The following are *High Hazard* for the purpose of *zone protection*:
 - (i) Clean-in-place systems.
 - (ii) Commercial laundries.
 - (iii) Cooling or heating systems with recirculating water.
 - (iv) Dockside facilities.
 - (v) Drinking nipples and troughs (agricultural).
 - (vi) Food preparation or food storage tanks, vats or vessels (clean-in-place systems).
 - (vii) In a Class 9c building—

- (A) dissecting rooms; and
- (B) utility rooms which contain fixtures other than hand basins; and
- (C) operating theatres.
- (viii) Industrial and teaching laboratories (except as referred to in [BS5.1.5\(b\)\(ii\)](#)).
- (ix) Industrial process water that has been recirculated.
- (x) Mortuary equipment used in funeral parlours, mortuaries and autopsy areas.
- (xi) Sanitary dump points.
- (xii) Tanks, vats or vessels associated with electroplating, degreasing, descaling, stripping, pickling, dipping or the like.
- (xiii) Type D irrigation systems injected with fertilisers, herbicides, nematicides, insecticides or weedicides.

BS5.1.6 Containment protection

- (a) The following are [Low Hazard](#) for the purpose of [containment protection](#):
 - (i) Class 1a buildings.
 - (ii) Premises served by a [rainwater harvesting system](#), not including any rainwater storage tanks that are buried tanks.
 - (iii) Premises served by a [Network Utility Operator's](#) recycled water supply.
- (b) The following are [Medium Hazard](#) for the purpose of [containment protection](#):
 - (i) Caravan parks.
 - (ii) Food and beverage processing plants.
 - (iii) Marinas.
 - (iv) Premises that are also connected to a—
 - (A) grey-water re-use system; or
 - (B) reticulated and disinfected reclaimed water system.
 - (v) Public [swimming pool](#).
- (c) The following are [High Hazard](#) for the purpose of [containment protection](#):
 - (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 plants or storage plants.
 - (x) Piers, docks and other waterfront facilities.
 - (xi) Premises where access to conduct inspections is restricted.
 - (xii) Premises with an alternative water supply, except as referred to in [BS51.6\(a\)\(ii\)](#) or [BS5.1.6\(b\)\(iv\)](#) or [BS5.1.6\(c\)\(vi\)](#).
 - (xiii) Sanitary depots.
 - (xiv) Sewage treatment plants and sewage lift stations.
 - (xv) Universities.

BS5.1.7 Fire-fighting water services

- (a) Fire-fighting water services with—
- (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, are *Low Hazard*.

Note 1:

Fire 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.

- (b) Any fire-fighting water services not referred to in **BS5.1.7(a)** are *Medium Hazard*.

Exemption 1:

The following are deemed *Low Hazard*:

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

Part B6 Rainwater 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*.

Application 1:

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.

Exemption 1:

This Part 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.

Explanatory information:

OBJECTIVE

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 harvesting system*; and
- (b) conserve water; and
- (c) safeguard the environment; and
- (d) safeguard public and private infrastructure; and
- (e) ensure that a *rainwater harvesting system* installation throughout its serviceable life will continue to satisfy the requirements of Objectives (a) to (d).

FUNCTIONAL STATEMENTS

BF6

Rainwater harvesting 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

BP6.1 Stored rainwater

- (1) A *rainwater 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.

BP6.2 Rainwater harvesting system installation

- (1) A *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*.

BP6.3 Rainwater service

- (1) A rainwater service must not have an unprotected *cross-connection* with any *Network Utility Operator's drinking water* service or with any *non-drinking water* service.

BP6.4 Identification

- (1) Pipes, pipe outlets, storage and holding tanks that form part of a *rainwater harvesting system* must be clearly identified.

Limitation:

BP6.4 does not apply if the *rainwater harvesting system* is the only water supply connected to the *site*.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

B6.1 Application

- (1) *Performance Requirements BP6.1 to BP6.4* are satisfied by complying with *B6.2 to B6.5*.

Tas B6.2(2)

B6.2 Collection of rainwater

- (1) A *rainwater harvesting system* must only collect roof water.

B6.3 Top-up lines

- (1) Any top-up line from a *Network Utility Operator's drinking water* supply to a rainwater tank must comply with *Part B1*.

B6.4 Buried and partially buried tanks

- (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 *B6.4(1)(a)* or *B6.4(1)(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.

NSW B6.4(2)

B6.5 Rainwater pipework and outlets

- (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*.

Section **C**

Sanitary Plumbing and Drainage Systems

Part C1 **Sanitary plumbing systems**

Part C2 **Sanitary drainage system**

Preview

Section C Sanitary Plumbing and Drainage Systems

Part C1 Sanitary plumbing systems

CP1.1 Design, construction and installation

C1.1 Application

C1.2 Invert levels

C1.3 General requirements

Part C2 Sanitary drainage system

CP2.1 Design, construction and installation

CP2.2 Swimming pool drainage

CV2.1 Velocity and liquid-to-air ratio

CV2.2 Pressure testing

C2.1 Application

C2.2 Invert levels

C2.3 Swimming pool drainage

C2.4 General requirements

Preview

Part C1 Sanitary plumbing systems

Vic Introduction to this Part

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 an *approved disposal system*.

Explanatory information:

OBJECTIVE

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

CF1

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.

Performance Requirements

CP1.1 Design, construction and installation

- (1) A sanitary *plumbing* system must ensure the following:
 - (a) Sewage or sullage is transferred to a sanitary *drainage* system or an *approved disposal system*.
 - (b) Access for maintenance of mechanical components, operational controls and 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.

Verification Methods

There are no [Verification Methods](#) in this Part.

Deemed-to-Satisfy Provisions

C1.1 Application

- (1) [Performance Requirement CP1.1](#) is satisfied by complying with [C1.2](#) and [C1.3](#).

C1.2 Invert levels

- (1) 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.

C1.3 General requirements

[NSW C1.3\(1\)](#)

[SA C1.3\(1\)](#)

[Vic C1.3\(1\)](#)

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary [plumbing](#) system must be in accordance with AS/NZS 3500.2.

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 may not be limited to, the following:

| 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 | 3.1.4 Termite Risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire protection of separating walls and floors |
| Fixtures or fittings in a wet area | F1 Damp and weatherproofing | 3.8.1 Wet areas and external weatherproofing |
| Service pipework external to the building and penetrations through roof cladding in a bushfire prone area | G5 Construction in bushfire prone areas | 3.10.5 Construction in bushfire prone areas |
| Pipework sound insulation | F5 Sound transmission and insulation | 3.8.6 Sound insulation |

[Tas Part C101](#)

Part C2 Sanitary drainage system

Vic Introduction to this Part

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 to an *approved disposal system*.

Explanatory information:

OBJECTIVE

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

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 CF2.2

CF2.2

Adequate means for the disposal of *swimming pool* waste water and *drainage* is to be provided to each *swimming pool*.

Performance Requirements

CP2.1 Design, construction and installation

- (1) A sanitary *drainage* system must ensure the following:
 - (a) Sewage is transferred from a sanitary *plumbing* system to an *approved disposal system*.
 - (b) Access for maintenance and clearing *blockages*.
 - (c) Ventilation to avoid foul air and gases accumulating in the sanitary *drainage* and sewerage system.
 - (d) 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*.

Vic CP2.101

NT CP2.2

CP2.2 Swimming pool drainage

- (1) 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 CP2.201

Verification Methods

Vic CV2.1

CV2.1 Velocity and liquid-to-air ratio

- (1) Compliance with CP2.1(2)(a) 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:

- The symbol 'm/s', used in CV2.1, means 'metres per second'.
- The purpose of the minimum velocity is to minimise the likelihood of *blockage* in the sanitary *drainage* system. The maximum velocity is intended to minimise the likelihood of damage to the system.

Vic CV2.2

CV2.2 Pressure testing

- (1) Compliance with CP2.1(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.

Deemed-to-Satisfy Provisions**C2.1 Application**

- (1) *Performance Requirements* CP2.1 and CP2.2 are satisfied by complying with C2.2 to C2.4.

C2.2 Invert levels

- (1) 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 C2.3

C2.3 Swimming pool drainage

- (1) Where pumped discharge from a *swimming pool* connects to a gully riser it must be installed in accordance with AS/NZS 3500.2.

Tas C2.3(2), (3)

ACT Appendix

C2.4 General requirements

NSW C2.4(1)

Sanitary Plumbing and Drainage Systems

NT C2.4(1)

Vic 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.

Vic C2.4(2), (3), (4), (5)

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 may not be limited to, the following:

| 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 | 3.1.1 Earthworks |
| Termite management for attachments to buildings and penetrations through a slab | B1 Structural provisions | 3.1.4 Termite Risk management |
| Penetrations for pipework through a vapour barrier | B1 Structural provisions | 3.2.2 Preparation |
| Pipework in timber bearers and joists of solid timber or engineered wood products | B1 Structural provisions | 3.4.0 Framing |
| Fittings, fixtures and pipework installations in steel framed construction | B1 Structural provisions | 3.4.2 Steel framing |
| Penetrations through a fire-resisting wall or floor | C3 Protection of openings | 3.7.3 Fire protection of separating walls and floors |

Excessive Noise

Part D1

Excessive noise

Preview

Section D Excessive Noise

Part D1 Excessive noise

DP1.1 Undue noise

DP1.2 Excessive noise

D1.1 Application

D1.2 Undue noise

D1.3 Sound insulation

Preview

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.

Explanatory information:

OBJECTIVE

DO1

The Objective of this Part is to—

- (a) safeguard people from illness, injury or *loss* (including *loss* of *amenity*) due to excessive noise of a *plumbing* and *drainage* system; and
- (b) ensure that a *plumbing* and *drainage* system installation throughout its serviceable life will continue to satisfy the requirements of Objective (a).

FUNCTIONAL STATEMENTS

DF1

Plumbing and *drainage* 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 *plumbing* and *drainage* system, and minimises any adverse impact on building occupants.

Performance Requirements

Vic DP1.1

DP1.1 Undue noise

- (1) *Plumbing* and *drainage* systems must be designed, constructed and installed in a manner that does not create undue noise.

Vic DP1.2

DP1.2 Excessive noise

- (1) *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.

Application 1:

DP1.2 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.
- (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.

NT Note 1

Note 1:

Part F5 in Volume One of the NCC contains *Performance Requirement FP5.1* through to *FP5.6* which cover sound transmission and insulation in walls and floors of Class 2, 3 and 9c buildings.

NT Note 2

Note 2:

Part 2.4 in Volume Two of the NCC contains *Performance Requirement P2.4.6* which covers sound insulation of walls in Class 1 buildings.

| |
|----------------------|
| Verification Methods |
|----------------------|

There are no *Verification Methods* in this part.

| |
|------------------------------|
| Deemed-to-Satisfy Provisions |
|------------------------------|

Vic D1.1

D1.1 Application

(1) *Performance Requirement DP1.1* is satisfied by complying with *D1.2*.

NT D1.1(2)

(2) *Performance Requirement DP1.2* is satisfied by complying with *D1.3*.

D1.2 Undue noise

- (1) To prevent undue noise *plumbing* and *drainage* systems must comply with—
- (a) *B1.4* for cold water services; or
 - (b) *B2.9* for heated water services; or
 - (c) *B3.3* for *non-drinking water* services; or
 - (d) *B4.2* for fire-fighting water services; or
 - (e) *C1.3* for sanitary *plumbing* systems; or
 - (f) *C2.4* for sanitary *drainage* systems.

NT D1.3

D1.3 Sound insulation

- (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*.

Note 1:

Specification F5.2 in Volume One of the NCC 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.

- (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.

Facilities

Part E1

Facilities

Preview

Section E Facilities

Part E1 Facilities

EP1.1 Facilities for people with disability

E1.1 Application

E1.2 General requirements

Preview

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.

Explanatory information:

OBJECTIVE

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

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

EP1.1 Facilities for people with disability

- (1) Where a *plumbing* and *drainage* system is provided, supply taps or other operational controls must be *accessible* and suitable for use.

Verification Methods

There are no *Verification Methods* in this part.

Deemed-to-Satisfy Provisions

E1.1 Application

- (1) *Performance Requirement EP1.1* is satisfied by complying with *E1.2*.

E1.2 General requirements

- (1) 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 in Volume One of the NCC sets out the requirements for the design and construction of accessible sanitary facilities in Class 1b, 2 to 9 and 10a buildings.

State and Territory Variations and Additions

Schedule 1 State & Territory Appendices

Preview

Schedule 1 State and Territory Variations and Additions

Schedule 1 State & Territory Appendices

Preview

Schedule 1

State & Territory Appendices

Commonwealth of Australia

Australian Capital Territory

New South Wales

Northern Territory

Queensland

South Australia

Tasmania

Victoria

Western Australia

Preview

Commonwealth of Australia

Footnote: **Other legislation affecting buildings**

Preview

Commonwealth of Australia

Footnote: Other legislation affecting buildings

1. Aged Care Buildings
2. Australian Capital Territory
3. Indian Ocean Territories
4. Communications and Information Technology
5. Defence Buildings
6. Disability Discrimination
7. Environment
8. Federal Airports
9. Jervis Bay Territory
10. Occupational Health and Safety
11. Australian Antarctic Territory
12. Territory of Heard Island and McDonald Islands
13. National or World Heritage Places
14. National Parks
15. Commonwealth funding for building work
16. Commonwealth buildings

Preview

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)

Australian Capital Territory

Appendix **Australian Capital Territory**

Footnote: **Other legislation affecting water and plumbing systems**

Preview

Australian Capital Territory

Appendix Australian Capital Territory

Footnote: Other legislation affecting water and plumbing systems

1. Plumbing and Drainage
2. Building
3. Health
4. Environment
5. Gas
6. Electrical
7. Utilities
8. Planning

Preview

Appendix Australian Capital Territory

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.

Preview

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

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

Preview

New South Wales

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| Section B | Water services |
| Section C | Sanitary plumbing and drainage systems |
| Footnote: | Other legislation affecting buildings |

New South Wales

Section B Water services

- NSW B1.4 General requirements
- NSW B2.2 * * * * *
- NSW B2.5 Maximum delivery temperature
- NSW B2.6 Temperature control devices
- NSW B3.3 General requirements
- NSW B5.501 Cooling tower water service
- NSW B6.4 Buried and partially buried tanks

Section C Sanitary plumbing and drainage systems

- NSW C1.3 General requirements
- NSW C2.4 General requirements

Footnote: Other legislation affecting buildings

1. Plumbing and Drainage
2. Building
3. Health
4. Environment
5. Gas
6. Electrical

Preview

Section B Water services

Part B1 Cold water services

Delete B1.4(1) and insert NSW B1.4(1) as follows:

NSW B1.4 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of cold water services must be in accordance with AS/NZS 3500.1 with the following additions:
 - (a) 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

Performance Requirements

Delete BP2.6(3) and replace with NSW BP2.6(3) as follows:

NSW BP2.6 Energy use and source

(3) * * * * *

Explanatory information:

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.

Verification Methods

Delete BV2.1 and insert NSW BV2.1 as follows:

NSW BV2.1 * * * * *

This clause has deliberately been left blank.

Explanatory information:

[BV2.1](#) does not apply in NSW as the sources of energy for new Class 1 and 10 buildings are regulated under BASIX.

Deemed-to-Satisfy Provisions

Delete B2.2 and insert NSW B2.2 as follows:

NSW B2.2 * * * * *

This clause has deliberately been left blank.

Explanatory information

Compliance is not *required* with the national provisions of [B2.2](#) as the sources of energy for new Class 1 and 10 buildings are regulated under BASIX.

Delete B2.5(1)(a)(iv) and insert NSW B2.5(1)(a)(iv) as follows:

NSW B2.5 Maximum delivery temperature

- (iv) any facility designated for use by people with a disability.

Delete B2.6(2)(d) and insert NSW B2.6(2)(d) as follows:

NSW B2.6 Temperature control devices

- (d) Temperature limited water heater with a maximum delivery temperature of 50 Deg marked in accordance with AS 3498.

Delete Application 1 and insert NSW Application 1 as follows:

NSW Application 1:

B2.6 applies to—

- (a) all new heated water services; or
- (b) replacing a hot water heater – regardless of the type of heater or location of the heater.

After NSW Application 1 insert NSW Exemption 1 as follows:

NSW Exemption 1:

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

Delete B3.3(1) and insert NSW B3.3(1) as follows—

NSW B3.3 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a *non-drinking water* service must be in accordance with the following:
 - (a) AS/NZS 3500.1 with the following variations:
 - (i) After clause 10.3(c) insert (d) and (e) as follows:
 - (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.
 - (e) There shall be no connection between treated greywater systems and drinking water, rainwater or other sources of supply.

Part B4 Fire-fighting water services

Part B4 does not apply in New South Wales.

Note:

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

After B5.4 insert NSW B5.501 as follows:

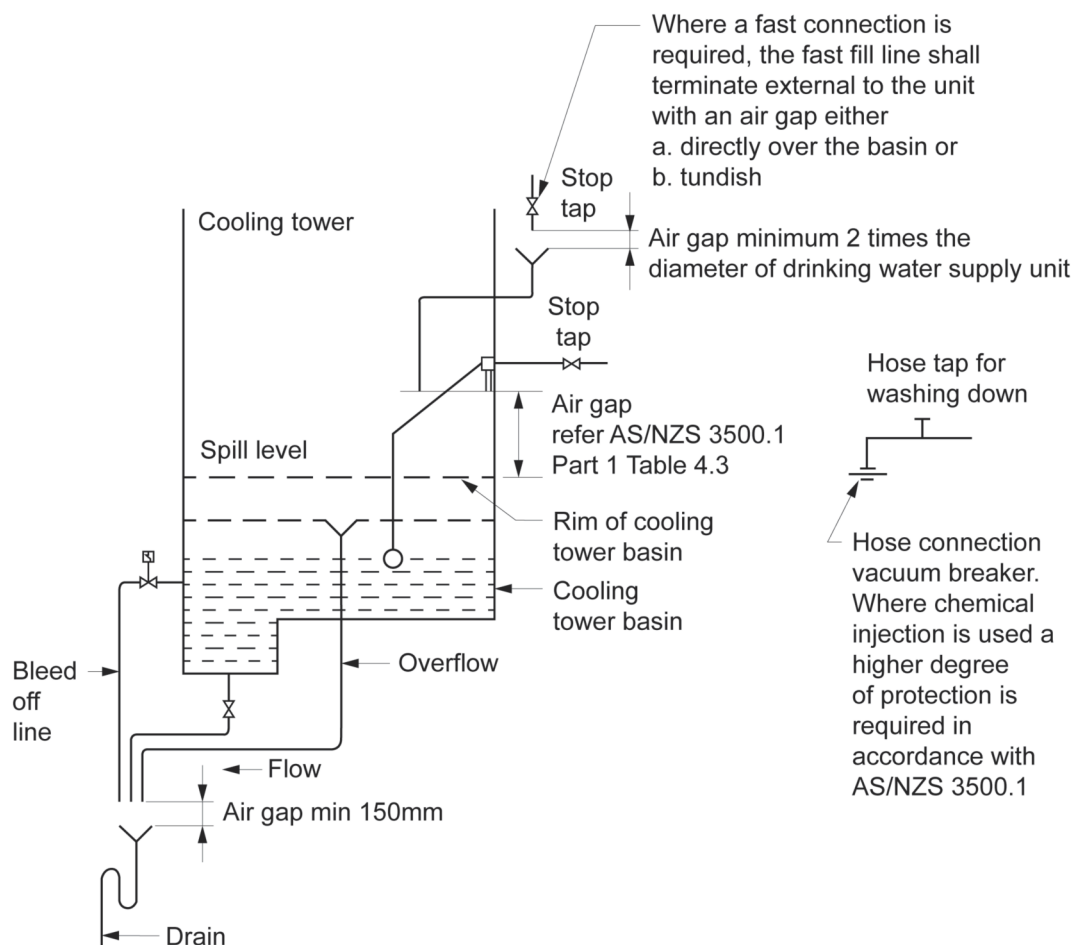
NSW B5.501 Cooling tower water service

- (1) 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.

Note:

See [NSW Figure B5.501](#) Typical Cooling Tower Connections.

NSW Figure B5.501 Typical Cooling Tower Connections



Part B6 Rainwater harvesting and use

Deemed-to-Satisfy Provisions

After clause B6.4(1) insert NSW B6.4(2) as follows:

NSW B6.4 Buried and partially buried tanks

(2) Buried and partially buried tanks must comply with section 16 of AS/NZS 3500.1 with the following variations—

(a) After clause 16.3.3(c) add (d) and (e) as follows:

(d) Single residential dwellings require the following:

- (i) Buried or partly buried rainwater tanks a non-testable dual check valve with atmospheric port is required for containment protection; and
- (ii) A non-testable device for zone protection. The Network Utility Operator reserves the right to require greater backflow for containment.

(e) 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.

Section C Sanitary plumbing and drainage systems

Part C1 Sanitary plumbing systems

Delete C1.3(1) and insert NSW C1.3(1) as follows:

NSW C1.3 General requirements

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

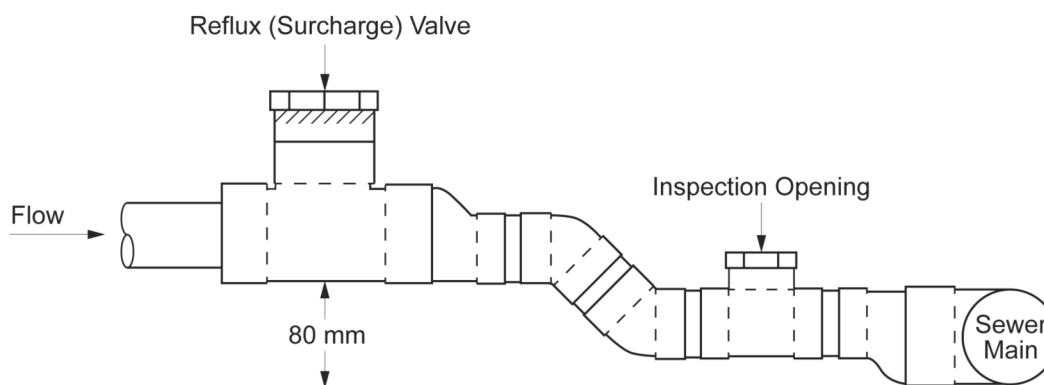
Part C2 Sanitary drainage systems

Delete C2.4(1) and insert NSW C2.4(1) as follows:

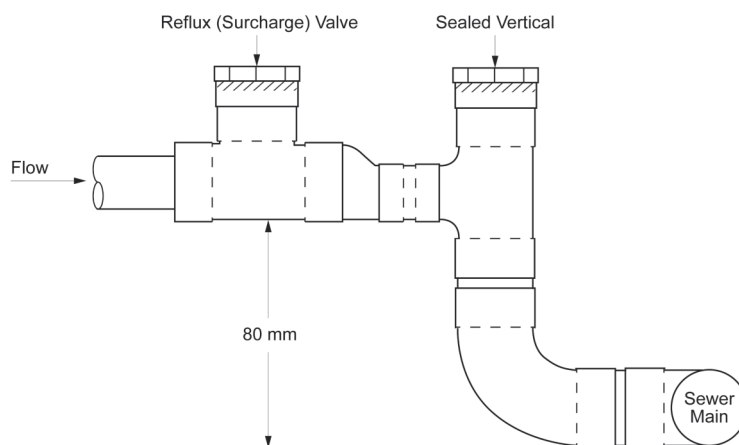
NSW C2.4 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *drainage* system must be in accordance with the following:—
- (a) AS/NZS 3500.2 with the following variation:
- (i) 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 PCA as a *habitable room*. See PCA “Definitions” and delete ‘excludes’ from (b).
 - (ii) After clause 4.5.2(b) insert (c) as follows:
 - (c) 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.
 - (iii) Substitute clause 4.5.3 as follows:
4.5.3 Where a surcharge is likely to occur and a reflux valve is to be installed, it shall be located in accordance with the following:
 - (a) 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.
 - (b) 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 Figure C2.4 Reflux Valves*.

NSW Figure C2.4 Reflux Valves



NSW Figure C2.3 Reflux Valves (Continued)

**Note**

When a reflux valve is installed the valve remains the responsibility of the property owner.

- (iv) After clause 4.7.1(h) insert (i) as follows:
 - (i) 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.
- (v) After clause 12.7(g) insert (h) as follows:
 - (h) 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.
- (vi) After clause 4.3.1(h) insert (i) as follows:
 - not have DN 40 or DN 50 traps installed.

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

Preview

Northern Territory

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| Section B | Water services |
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| Footnote: | Other legislation affecting buildings |

Northern Territory

Section B Water services

NT BP2.6 Energy use and source

NT BV2.1 * * * * *

NT B2.2 * * * * *

NT B2.9 General requirements

Section C Sanitary plumbing and drainage systems

NT CP2.2 * * * * *

NT C2.3 * * * * *

NT C2.4 General requirements

Section D Excessive noise

NT DP1.2 Excessive noise

NT D1.1 Application

NT D1.3 * * * * *

Footnote: Other legislation affecting buildings

1. Plumbing and Drainage
2. Building
3. Health
4. Planning
5. Gas
6. Electrical
7. Water Supply and Sewage Services

Section B Water services

Part B2 Heated water services

Performance Requirements

Delete BP2.6(3) and insert NT BP2.6(3) as follows:

NT BP2.6 Energy use and source

(3) * * * * *

Verification Methods

Delete BV2.1 and insert NT BV2.1 as follows:

NT BV2.1 * * * * *

This clause has deliberately been left blank.

Deemed-to-Satisfy Provisions

Delete B2.2 and insert NT B2.2 as follows:

NT B2.2 * * * * *

This clause has deliberately been left blank.

Delete B2.9(1) and insert NT B2.9(1) as follows:

NT B2.9 General requirements

- (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 concession to clause 5.9.4(a) for existing dwellings
 - (a) 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).

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 CF2.2 and insert NT CF2.2 as follows:

Explanatory information:

NT CF2.2

* * * * *

Performance Requirements

Delete CP2.2 and insert NT CP2.2 as follows:

NT CP2.2 * * * * *

This clause has deliberately been left blank.

Deemed-to-Satisfy Provisions

Delete C2.3 and insert NT C2.3 as follows:

NT C2.3 * * * * *

Delete C2.4(1) and insert NT C2.4(1) as follows:

NT C2.4 General requirements

- (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:

4.6.6.6 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; and
 - (b) Substitute clause 4.6.6.7 as follows:

4.6.6.7 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; and
 - (c) Inspection openings are only required—
 - (i) at the connections to the *Network Utility Operator* sewer main; and
 - (ii) where a new section of drain is to be connected to an existing drain; and
 - (iii) as required by the regulator; and
 - (d) A domestic *swimming pool* must not be connected to sewer main; and
 - (e) 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*; and
 - (f) A clothes washing machine must not discharge into a floor waste gully.

Section D Excessive noise

Part D1 Excessive noise

Performance Requirements

Delete Note 1 and Note 2 and insert NT Note 1 and NT Note 2 as follows:

NT DP1.2 Excessive noise

NT Note 1:

[Part F5](#) in the NT Appendix in Volume One of the NCC contains the NT Performance Requirements [NT FP5.1](#) through to [NT FP5.4](#) which cover sound transmission and insulation in walls and floors of Class 2, 3 and 9c buildings.

NT Note 2:

[Part 2.4](#) Volume Two of the NCC contains the NT Performance Requirements [P2.4.6](#) which covers sound insulation of walls in Class 1 buildings.

Deemed-to-Satisfy Provisions

Delete D1.1(2) and insert NT D1.1(2) as follows:

NT D1.1 Application

(2) [Performance Requirement DP1.2](#) is satisfied by complying with—

- (a) [NT F5.0](#) through to [NT F5.8](#) in the NT Appendix to NCC Volume 1 for Class 2, 3 and 9c buildings; and
- (b) [NT Part 3.8.6](#) in NCC Volume 2 for Class 1 buildings.

Delete D1.3 and insert NT D1.3 as follows:

NT D1.3 * * * * *

The clause has deliberately been left blank.

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

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

Preview

Queensland

Section B Water services

Preview

Queensland

Section B Water services

Qld B1.2 Sanitary flushing

Qld B2.2 * * * * *

Qld B2.5 Maximum delivery temperature

Qld B2.6 Temperature control devices

Preview

Section B Water services

Part B1 Cold water services

Delete B1.2(1) and insert Qld B1.2(1) as follows:

Qld B1.2 Sanitary flushing

(1) * * * * *

Part B2 Heated water services

Performance Requirements

Delete BP2.6 and insert Qld BP2.6 as follows:

Qld BP2.6 * * * * *

This clause has deliberately been left blank.

Verification Method

Delete BV2.1 and insert Qld BV2.1 as follows:

Qld BV2.1 * * * * *

This clause has deliberately been left blank.

Delete B2.2 and insert Qld B2.2 as follows:

Qld B2.2 * * * * *

This clause has deliberately been left blank.

Delete Application 1 and insert Qld Application 1 as follows:

Qld B2.5 Maximum delivery temperature

Qld Application 1:

* * * * *

Delete Application 1 and insert Qld Application 1 as follows:

Qld B2.6 Temperature control devices

Qld Application 1:

* * * * *

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*.

South Australia

| | |
|---------------------|---|
| Section B | Water services |
| Section C | Sanitary plumbing and drainage systems |
| SA Section F | On-site waste water systems |
| Schedule 3 | Defined terms |
| Schedule 4 | List of referenced documents |
| Footnote: | Other legislation affecting buildings |

South Australia

Section B Water services

- SA B1.4 General requirements
- SA B2.2 Water Heater in a heated water supply system
- SA B2.9 General requirements

Section C Sanitary plumbing and drainage systems

- SA C1.3 General requirements

SA Section F On-site waste water systems

- SA FP1.1 Health, environment and amenity
- SA FP1.2 Infrastructure
- SA FP1.3 On-site waste water management
- SA FP1.4 Land application systems
- SA F1.1 Application
- SA F1.2 General requirements
- SA FP2.1 Health, environment and amenity
- SA FP2.2 Transferal
- SA FP2.3 Design, construction and installation
- SA F2.1 Application
- SA F2.2 General requirements

Schedule 3 Defined terms

- SA Schedule 3 Definitions

Schedule 4 List of referenced documents

- SA Schedule 4 List of referenced documents

Footnote: Other legislation affecting buildings

1. Plumbing and Drainage
2. Building
3. Health
4. Environment
5. Gas
6. Electrical

Section B Water services

Part B1 Cold water services

Delete B1.4(1) and insert SA B1.4(1) and (2) as follows:

SA B1.4 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of cold water services must be in accordance with the following:
 - (a) AS/NZS 3500.1 with the following additions:
 - (i) 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; and
 - (ii) 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; or
 - (2) Where a water service from a rainwater tank is permitted to interconnect with the water service from a water main supply, the following applies to Class 1 buildings and extensions or additions to Class 1 buildings where the roof area is not less than 50 m². 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

Delete B2.2 and insert SA B2.2 as follows:

SA B2.2 Water Heater in a heated water supply system

- (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 Section SA B2.2 (1), or
 - (b) an electric water heater with a rated hot water delivery of no greater than 250 litres, or
 - (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) Sections SA B2.2 (1) and (2) do not apply to:
- (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

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 B2.2 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.

Delete B2.9(1) and insert SA B2.9(1) as follows:

SA B2.9 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a *heated water* service must be in accordance with the following:
 - (a) AS/NZS 3500.4 with the following variations:
 - (i) After clause 1.11.2(b) insert (c), (d), (e) and (f) as follows:
 - (c) Heated water services in buildings constructed after 19 October 1995 shall have temperature control in accordance with items (a) and (b).
 - (d) All new solar water installations (including solar heater replacements) shall be in accordance with items (a) and (b).
 - (e) Where an existing building is altered, or extend 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).
 - (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. The device must meet the requirements of items (a) and (b).
 - (ii) After clause 1.11.2 Note 4 insert Note 5 as follows:

5:

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.

- (iii) Substitute clause 5.8(c) as follows:
 - 5.8(c) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves.
- (iv) Substitute clause 5.11.2.1 as follows:
 - 5.11.2.1 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; and
- (v) Substitute clause 5.11.3(e) as follows:
 - 5.11.3(e) 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

Delete C1.3(1) and insert SA C1.3(1) as follows:

SA C1.3 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *plumbing* system must be in accordance with either—
 - (a) AS/NZS 3500.2 with the following variations and additions:
 - (i) After clause 4.7.1(h) insert (i) as follows:
 - (i) 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.
 - (ii) Substitute clause 2.4.1(a) as follows:
 - (A) 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.
 - (iii) After clause 12.7(g) insert 12.7(h) and (i) as follows:
 - (h) 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.
 - (i) 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.
 - (iv) After clause 13.9(b) delete the following:

Where a bath trap is not accessible, the bath shall discharge untrapped to a to a floor waste gully (FWG) in accordance with Table 4.6.7.2 and Appendix B.
 - (vii) After clause 13.27.2 insert additional clause 13.28 as follows:

13.28 Trade Waste Pre-Treatment Devices

All trade waste pre-treatment devices shall connect to the sewerage system via a disconnector gully.

SA Section F On-site waste water systems

SA Part F1 On-site waste water management 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 an *on-site wastewater management system*.

Explanatory information:

OBJECTIVE

SA FO1

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

SA FF1.1

on-site wastewater management systems must collect, contain, treat and 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

SA FP1.1 Health, environment and amenity

- (1) An *on-site wastewater management system* must ensure the following:
 - (a) Risks associated with the discharge of treated wastewater to the environment are minimised.
 - (b) Risks associated with the discharge of the end product of a composting toilet to the environment are minimised.
 - (c) Surface and ground water are not polluted.
 - (d) Soil productivity is maintained or enhanced.

SA FP1.2 Infrastructure

- (1) Wastewater must be transferred to an *on-site wastewater management system* in a way that avoids the following:
 - (a) *Blockage* and *uncontrolled discharge*.
 - (b) Entry of foul air and gases into buildings.
- (2) Wastewater must be transferred to an *on-site wastewater management system* in a way that ensures the following:
 - (a) Safe and hygienic transferal of waste.
 - (b) Safe access for maintenance.

SA FP1.3 On-site waste water management

- (1) An *on-site wastewater management system* must avoid the following:

- (a) Contamination of *drinking water*, soils, ground water and waterways.
 - (b) *Uncontrolled discharge*.
 - (c) Foul air and gases accumulating within or entering buildings.
 - (d) Unauthorised access by people.
 - (e) Entry of stormwater to the system.
- (2) An *on-site wastewater management system* must ensure the following:
- (a) Cleaning, maintenance, measurement and performance sampling can be conducted as appropriate.
 - (b) The manufacturer, model, serial number and designed capacity is easily identifiable after installation.
 - (c) Materials which are resistance to the water and waste that will be disposed.
 - (d) Appropriate treatment and storage capacity for the volume of waste and frequency of disposal.
 - (e) Appropriate size, strength and rigidity for the nature, flow rates, volume of wastes and/or waste products which must be processed.
 - (f) Vehicle access for the collection of waste water.
 - (g) The installation throughout its serviceable life will continue to satisfy the requirements of items SA FP1.3(2)(a) to SA FP1.3(2)(f).

SA FP1.4 Land application systems

- (1) An *on-site wastewater management system* and associated land application system must avoid the following:
- (a) Damage from root penetration, superimposed loads or ground movement.
 - (b) Entry of water, foul air or gases from the system into buildings.
 - (c) Entry of stormwater to the system.
 - (d) *Blockage* and unintended or *uncontrolled discharge*.
- (2) An *on-site wastewater management system*, and any associated land application system must provide the following:
- (a) Protection against internal contamination.
 - (b) Access for maintenance and cleaning.
 - (c) Ventilation to avoid foul air and gases accumulation in the system.
- (3) A facility must continue to satisfy the requirement of items SA FP1.4(1) – SA FP1.4(2)

Verification Methods

There are no *Verification Methods* for this Part.

Deemed-to-Satisfy Provisions

SA F1.1 Application

- (1) *Performance Requirements* SA FP1.1 to SA FP1.4 are satisfied by complying with SA F1.2.

Acceptable plumbing manuals

SA F1.2 General requirements

- (1) The manufacture of septic tanks and their associated fittings for the treatment of domestic wastewater up to 14,000 litres per week must be in accordance with AS/NZS 1546.1.
- (2) Waterless composting toilets must meet the requirements of AS/NZS 1546.2.
- (3) The design, means of compliance and specification for testing of aerated wastewater treatment systems and

associated fitting must be in accordance with AS/NZS 1546.3.

- (4) The design and installation of sanitary plumbing and drainage systems must be in accordance with AS/NZS 3500.2 and the requirements of this Part.
- (5) The design and sustainable management of domestic land application systems must be in accordance with AS/NZS 1547.

SA Part F2 On-site liquid trade waste systems

Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of any part of a system of a property used for the on-site treatment, conveyance and/or disposal of liquid trade waste.

Performance Requirements

SA FP2.1 Health, environment and amenity

- (1) An on-site liquid trade waste system must ensure the following:
 - (a) Risks associated with the discharge of treated liquid trade waste to the environment are minimised.
 - (b) Surface and ground water are not polluted.
 - (c) Soil productivity is maintained or enhanced.

SA FP2.2 Transferral

- (1) Liquid trade waste must be transferred within disposal systems to storage containers and in a way that avoids the following:
 - (a) *Blockage* and *uncontrolled discharge*.
 - (b) Entry of foul air and gases into buildings.
- (2) Liquid trade waste must be transferred within disposal systems to storage containers and in a way that ensures the following:
 - (a) Safe and hygienic transferral.
 - (b) Safe access, as appropriate, for clearing *blockages*.

SA FP2.3 Design, construction and installation

- (1) A facility for the storage, treatment and/or disposal of liquid trade waste must:
 - (a) Have appropriate treatment and storage capacity for the volume of waste and frequency of disposal.
 - (b) Be of the appropriate size, strength and rigidity for the nature, flowrates, volume of wastes, by-products and residues which must be processed.
 - (c) Have vehicle access, for collection.
 - (d) Be of an appropriate structural strength for where pedestrian or vehicular traffic is likely.
 - (e) Be constructed of materials which are resistant to water and the expected waste that will be disposed.
- (2) A facility for the storage, treatment and/or disposal of liquid trade waste must avoid the likelihood of the following:
 - (a) Contamination of drinking water, soils, ground water and waterways.
 - (b) Foul air and gases accumulating within or entering buildings.
 - (c) *Uncontrolled discharge*.
 - (d) Unauthorised access by people.
 - (e) Entry of stormwater to the sewerage system.

Application 1:

SA FP2.3(2)(e) does not apply in cases where a contaminated stormwater discharge of limited volume is accepted by the *Network Utility Operator* as a trade waste.

- (3) A facility used for storage, treatment and/or disposal of liquid trade waste must be designed, constructed and installed to allow the following:
 - (a) Cleaning, maintenance, measurement and performance sampling can be conducted.
 - (b) Identification of the manufacturer, model, serial number and capacity after installation.
- (4) A facility must continue to satisfy the requirements of items SA FP2.3(1) – SA FP2.3(3) throughout its expected lifetime.

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| Verification Methods |
|-----------------------------|

There are no *Verification Methods* for this Part.

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|-------------------------------------|
| Deemed-to-Satisfy Provisions |
|-------------------------------------|

SA F2.1 Application

- (1) *Performance Requirements* SA FP2.1 to SA FP2.3 are satisfied by complying with SA F2.2.

SA F2.2 General requirements

- (1) Where pre-treatment facilities are *required*, they must comply with the requirements of the authority having jurisdiction, including receiving *Network Utility Operator* (where relevant) and those responsible for occupational health and safety, dangerous goods management and environmental protection.
- (2) Where the written agreement of the authority having jurisdiction and the receiving *Network Utility Operator* is required, the liquid trade waste systems and pre-treatment facilities are to comply with the requirement of the authority having jurisdiction and the receiving *Network Utility Operator*.
- (3) Where pre-treatment facilities are not *required* by the authority having jurisdiction or the receiving *Network Utility Operator*, the minimum requirement for SA FP2.2 and SA FP2.3 is compliance with AS/NZS 3500.2.

Schedule 3

Defined terms

SA Schedule 3 Definitions

Insert definition for *rated hot water delivery* as follows:

Rated hot water delivery means rated hot water delivery as specified in AS 1056.1.

Preview

Schedule 4 List of referenced documents**SA Schedule 4 List of referenced documents**

In Table 1, insert additional references as follows:

SA Table 1 List of referenced documents

| Document No. | Date | Title | PCA Clause |
|--------------|------|--|-------------------------|
| AS/NZS 1260 | 2009 | PVC-U pipes and fittings for drain, waste, and vent applications Amdt 1 | SA C1.3 |

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

Preview

Tasmania

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| Section A | Governing requirements |
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| Section C | Sanitary plumbing and drainage |
| Tas Section F | Stormwater drainage systems |
| Tas Section G | Heating, ventilation and air-conditioning systems |
| Tas Section H | On-site waste water systems |
| Tas Section I | Materials and products certification and authorisation |
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| Footnote: | Other legislation affecting buildings |

Tasmania

Section A Governing requirements

- Tas A1.0(7) Advisory information
- Tas A4.0 Referenced documents
- Tas A5.3 Evidence of suitability – Volume Three

Section B Water services

- Tas Introduction to this Part
- Tas B1.4 General Requirements
- Tas Introduction to this Part
- Tas B101.1 Application
- Tas B101.2 Cold water storage tanks
- Tas B101.3 Materials
- Tas B101.4 Marking of pre-fabricated tanks
- Tas B101.5 Sludge valves
- Tas B101.6 Collection
- Tas B101.7 Openings in tanks
- Tas B101.8 Maintenance
- Tas B101.9 Commissioning
- Tas B101.10 Warranty
- Tas B2.2 Water heater in a heated water supply system
- Tas B2.5 Maximum delivery temperature
- Tas B2.6 Temperature control devices
- Tas BV4.1
- Tas B6.2 Collection of rainwater

Section C Sanitary plumbing and drainage

- Tas Introduction to this Part
- Tas C101.1 Installation requirements
- Tas C2.3 General requirements

Tas Section F Stormwater drainage systems

- Tas FP1.1 Roof drainage systems
- Tas FP1.2 Overview
- Tas FP1.3 Watertightness
- Tas FP1.4 Design, construction and installation
- Tas F1.1 Application
- Tas F1.2 General requirements
- Tas FP2.1 Surface drainage systems
- Tas FP2.2 Sub-surface drainage
- Tas FP2.3 Design, construction and installation
- Tas F2.1 Application
- Tas F2.2 General Requirements

Tas Section G Heating, ventilation and air-conditioning systems

- Tas GP1.1 Design, construction, installation and maintenance
- Tas GP1.2 Pressure equipment
- Tas GP1.3 Microbial control
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Tas Section H On-site waste water systems

Tas HP1.1 Health, environment and amenity
Tas HP1.2 Infrastructure
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Tas HP1.4 Land application systems
Tas H1.1 Application
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Tas H101.1 Scope
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Tas HP2.1 Health, environment and amenity
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Tas H201.2 Installation requirements
Tas H202.1 Scope
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Tas H202.3 General installation requirements
Tas H202.4 Installation diagrams and notes

Tas Section I Materials and products certification and authorisation

Tas I101.1 Application
Tas I101 P1
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Tas I101 V2
Tas I101 V3
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Tas I101.2 Application
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Tas I102 V1
Tas I102.2 Application
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Schedule 3 Definitions

Definitions

Schedule 4 Referenced documents

Footnote: Other legislation affecting buildings

Section A Governing requirements

Part A1 Interpreting the NCC

After A1.0(6) insert Tas A1.0(7) as follows:

Tas A1.0(7) Advisory information

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

Delete A4.0(3) and insert Tas A4.0(3) as follows:

Tas A4.0 Referenced documents

- (3) (a) Where a new edition, issue or amendment of a primary referenced document is not listed under Schedule 4, 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

Tas A5.3 Evidence of suitability – Volume Three

Delete A5.3(1)(a) and insert Tas A5.3(1)(a) as follows:

- (a) a test report provided by a certification body or NATA accredited testing laboratory, in accordance with AS/NZS 4020; or

After A5.3(1)(b) insert Tas A5.3(1)(c) as follows—

- (c) [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 A5.3(3)(b) and insert Tas A5.3(3)(b) as follows:

- (b) a report issues 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.

After A5.3(4) insert Tas A5.3(401) as follows—

- (401) 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.

After A5.3(5)(b)(ii) insert Tas A5.3(5)(b)(iii) as follows—

- (iii) Meeting the requirements of [Tas Part I101](#) or [Tas Part I102](#) (as appropriate).

After A5.3(6) insert Tas A5.3(7), (8), (9), (10) as follows—

- (7) 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 [A5.3\(5\)\(b\)\(iii\)](#).
- (8) 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 A5.3(5)(b)(iii).

- (9) 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 A5.3(5)(b)(iii).
- (10) 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 A5.3(5)(b)(iii) is given.

Preview

Section B Water services

Part B1 Cold water services

Delete Introduction to this Part and insert Tas Introduction to this Part as follows:

Tas 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 cold-water service of a property that is connected to the *drinking water* supply, from the *point of connection* to the points of discharge. For the avoidance of doubt, the *point of connection* includes any tanks used for the collection, storage and supply of *drinking water*.

Delete B1.4(1) and insert Tas B1.4(1), (2) and (3) as follows:

Tas B1.4 General Requirements

- (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.

Tas Part B101 Cold water storage tanks

Tas Introduction to this Part

This Part is an addition to the *Deemed-to-Satisfy Provisions* of [Part B1](#). It sets out the requirements for pre-fabricated and constructed on-site cold-water storage tanks used in a *drinking water* supply system.

Tas B101.1 Application

- (1) This Part applies to tanks — including rainwater tanks — connected to the roof *plumbing* system, or a tank supplied from a nearby stream, bore or well used in *drinking water* services, or a *drinking water* supply in reticulated or non-reticulated areas.

Installation of cold-water storage tanks used to supply water to a *drinking water* service must comply with this Part. For connection of cold water tanks where reticulated supply is available refer to Sections 8 and 16 of AS/NZS 3500.1.

Tas B101.2 Cold water storage tanks

Cold water storage tanks and their installation must comply with the relevant requirements of the following documents—

AS

| | |
|------|---|
| 2070 | Plastics materials for food contact use |
| 3600 | Concrete structures |
| 3735 | Concrete structures retaining liquids |

AS/NZS

| | |
|--------|---|
| 2179.1 | Specifications for rainwater goods, accessories and fasteners – Metal shape or sheet rainwater goods, and metal accessories and fasteners |
| 3500 | Plumbing and drainage |
| 3500.1 | Water services |
| 3500.3 | Stormwater drainage |
| 4020 | Testing of products in contact with drinking water |
| 4130 | Polyethylene (PE) pipes for pressure applications |
| 4766 | Polyethylene storage tanks for water and chemicals |

ABCB

Procedures for the Certification of Plumbing and Drainage Products

The followings references are for information only—

HB 230 Rainwater Tank Design and Installation Handbook

enHealth Guidance on the use of rainwater tanks

Tas B101.3 Materials

- (1) Materials and [products](#) in contact with water in a [drinking water](#) supply must comply with AS/NZS 4020. Linings and coatings must comply with AS/NZS 4020 at a surface area to volume ratio not greater than that specified in the conditions of use. Materials and [products](#) used in manufacture of tanks must be selected to ensure fitness for their intended purpose. Tanks must be selected from the relevant Standards listed in this Part. Factors to be taken into account include — but are not limited to—
 - (a) the nature and source of the water;
 - (b) the risk of corrosion and tank contamination;
 - (c) the nature of the environment;
 - (d) the physical and chemical characteristics of the materials and [products](#);
 - (e) compatibility of materials and [products](#); and
 - (f) accessibility for monitoring and maintenance.

Explanatory information:

Information on some of the above items may be obtainable from the manufacturer or supplier of the [product](#) or materials.

- (2) **Plastics**
Plastic tanks must comply with AS/NZS 4766.
- (3) **Waterstops, joint fillers and sealants**
Sealants used in the manufacture of tanks must be certified under the [WaterMark Certification Scheme](#) to AS/NZS 4020.
- (4) **Solders**
Solders used in the manufacture of tanks must be certified under the [WaterMark Certification Scheme](#) to AS/NZS 4020. Soft solder must comply with AS 1834.1 and be lead-free for roof [drainage](#) components used for the conveyance of [drinking water](#).
- (5) **Stainless steel**
Stainless steel sheet must be manufactured from alloy 304 or 316 complying with ASTM A240/A240M.
- (6) **Dezincification resistant (DR) copper alloys**
Where dezincification resistant copper alloys are specified, they must comply with AS 2345.
- (7) **Steel sheet**
Hot-dipped zinc-coated or aluminium/zinc-coated sheet steel must comply with AS 1397 and have an internal lining or coating certified to AS/NZS 4020.
- (8) **Concrete tanks**
Concrete tanks must comply with AS 3735 or AS 3600.
- (9) **Tank linings**
Tank linings must comply with AS/NZS 4020.

Tas B101.4 Marking of pre-fabricated tanks

- (1) In addition to the marking requirements set out in clause 8.9 of AS/NZS 3500.1 all tanks must be permanently marked with the following—
 - (a) Manufacturer's name, brand or trademark.
 - (b) The Standard which the tank is manufactured to.
 - (c) The date of manufacture.

Tas B101.5 Sludge valves

- (1) A sludge valve must be fitted when the capacity of the tank exceeds 500 L. The minimum size of the valve must be not less than half the outlet pipe size nor less than DN 40.

Tas B101.6 Collection

Explanatory information:

Rainwater for drinking purposes should not be collected from recently painted roofs (until after the first few rainfalls), timber roofs preserved with chemicals, roofs coated with lead flashings, lead-based paints or tar-based coatings, or parts of roofs near flues from solid fuel heaters. Rainwater for *drinking water* purposes may be collected from roof types other than those identified above provided the roof and associated gutters are kept clean of leaves, animal remains, dust and other debris. Gutters must be kept clean by installing screens or leaf diverters between the roof and the water tank. The system should incorporate a 'first flush system' or other diversion system that will prevent the first flush of water from entering the tank.

Tas B101.7 Openings in tanks

- (1) All openings to tanks must be sealed so that insects, small animals, birds and sunlight cannot enter tanks, in order to minimise the growth of algae and to prevent unauthorised access.

Tas B101.8 Maintenance

Explanatory information:

Tanks should be regularly maintained by cleaning out accumulated sludge from the base every 2 - 3 years. For detailed advice on desludging and maintaining tanks refer to the enHealth Guide – Guidance on the use of rainwater tanks; or HB 230 Rainwater tank design and installation handbook.

Tas B101.9 Commissioning

- (1) Before using the water from a tank for the first time the tank must be cleaned and disinfected (See Appendix I of AS/NZS 3500.1).

Explanatory information:

For ongoing maintenance of water quality one or more of the following water quality treatment methods should be adopted:

Chlorinating: To commission the tank sufficient chlorine should be added to provide a free chlorine residual of 0.5 mg/L after 30 minutes. To satisfy chlorinating requirements an initial dose of 5 mg/L of chlorine may be necessary. For every kL of water in the tank, add either: 40 mL of liquid pool chlorine (sodium hypochlorite - 12.5% available chlorine); or 8 grams of granular pool chlorine (calcium hypochlorite - 65% available chlorine). To calculate the tank volume in kL for a cylindrical tank the volume in of water in kL = $D \times D \times H \times 0.785$. Where D = diameter of the tank, and H = depth of water in the tank in metres. To verify this calculation, compare this volume with the maximum capacity of the tank. The chlorine residual may be tested with a swimming pool test kit or dip strips. Water after chlorinating should not be used for 24 hours to enable any harmful microorganisms to be killed off.

Filtration: If filters are used in *drinking water* installations they are to be certified to the relevant Australian Standard under the *WaterMark Certification Scheme* and should be maintained by following the manufacturer's maintenance instructions.

Ultraviolet Disinfection: Filtration may be required to address water turbidity to enable adequate UV disinfection. Ultraviolet treatment is affected by the levels of turbidity, organic content from suspended solids, pH, hardness and UV transmissivity of the water. The intensity of the UV light and the build-up of suspended solids on the quartz tube affect the disinfection performance. Regular monitoring of the quartz tubes is critical. Lamps also need to be replaced regularly in accordance with the manufacturer's instructions.

Tas B101.10 Warranty

- (1) The manufacturer's warranty must contain the following statement: "This tank has been manufactured for the storage of drinking water and all materials used are suitable for contact with drinking water."

Part B2 Heated water services

Delete B2.2(1)(a) and (d) and insert Tas B2.2(1)(a) and (d) as follows—

Tas B2.2 Water heater in a heated water supply system

- (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 complying with AS/NZS 3500.4.
- (d) * * * * *

Tas B2.5 Maximum delivery temperature

Delete Application 1 and insert Tas Application 1 and Tas Exemption 1 as follows:

Tas Application 1:

B2.5 applies to new and replacement heated water installations for personal hygiene purposes.

Tas Exemption 1:

B2.5 does not apply to the replacement of a single heated water storage unit within a range or bank of heaters.

Tas B2.6 Temperature control devices

Delete B2.6(2)(d) and insert Tas B2.6(2)(d) as follows:

- (d) temperature limited water heater limited to 50 ° C in accordance with AS3498.

Delete Application 1 and insert Tas Application 1 and Tas Exemption 1 as follows:

Tas Application 1:

B2.6 applies to new and replacement heated water installations.

Tas Exemption 1:

B2.6 does not apply to the replacement of a single heated water storage unit within a range or bank of heaters.

Part B4 Fire-fighting water services

After BP4.1 insert BV4.1 as follows:

Verification Methods

Tas BV4.1

- (1) Verification of fire-fighting water service performance shall be conducted by a qualified third part certifier (as determined by the Tasmanian Director of Building Control) and/or the fire-fighting authority having jurisdiction.

Part B6 Rainwater harvesting and use

Tas B6.2 Collection of rainwater

After B6.2(1) insert Tas B6.2(2) as follows:

- (2) A rainwater harvesting system for Class 1 and 10 Buildings satisfies B6.1 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

After Part C1, insert Tas Part C101 as follows:

Tas Part C101 Non-flushing sanitary fixtures

Tas Introduction to this Part

This Part is an addition to [Part C1](#) and sets out the requirements for the installation of non-flushing [sanitary fixtures](#).

Tas C101.1 Installation requirements

- (1) The fixture is to be an authorised fixture or certified under the [WaterMark Certification Scheme](#), as appropriate.
- (2) The fixture is to be installed in accordance with [Tas F2.102](#) of the Building Code of Australia Volume One; or **Part 3.8.3.4** of the Building Code of Australia Volume Two, as appropriate.

Part C2 Sanitary drainage systems

After CP2.2 insert Tas CP2.201 as follows—

| |
|---------------------------------|
| Performance Requirements |
|---------------------------------|

Tas CP2.201 On-site wastewater management systems

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](#).

After C2.3(1) insert Tas C2.3(2) and (3) as follows—

Tas C2.3 General requirements

- (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 H101](#), using [products](#) authorised under the [WaterMark Certification Scheme](#) or [Tas 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 C101](#), using [products](#) authorised under the [WaterMark Certification Scheme](#) or [Tas I101](#) (as appropriate).

Tas Section F Stormwater drainage systems

Tas Part F1 Roof drainage systems

Tas Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of any part of a roof *drainage* system.

Explanatory information:

Objective

Tas FO1

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 roof *drainage* installation; and
- (b) ensure that a roof *drainage* installation is adequate; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a roof *drainage* 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

Tas FF1.1

Buildings are to be provided with a roof *drainage* installation constructed to provide protection for people, property and the environment from the adverse effects of stormwater.

Performance Requirements

Tas FP1.1 Roof drainage systems

- (1) A roof *drainage* system must have capacity to transfer an *average recurrence interval* of rainfall generated from a storm.
- (2) The *average recurrence interval* of rainfall in (1) must be appropriate to the following:
 - (a) The importance of the building
 - (b) The severity of potential damage to the property
 - (c) The severity of potential damage to property, loss of amenity, illness, or injury that would result from the failure of the system.

Tas FP1.2 Overview

- (1) A roof *drainage* system must provide an overflow device to transfer stormwater flows generated by extreme rainfall events.

Tas FP1.3 Watertightness

- (1) All internal roof *drainage* components must be watertight.

Tas FP1.4 Design, construction and installation

- (1) A roof *drainage* system must ensure the following—
 - (a) Stormwater is transferred to a *point of connection*.
 - (b) Access for maintenance and clearing *blockages*.

- (2) A roof *drainage* installation must avoid the following—
- (a) *Loss* of *amenity* due to *blockages* and *uncontrolled discharge*.
 - (d) Foul air and gases accumulating in the roof *drainage* system
 - (c) *Loss* to buildings and property *amenity* due to *blockages* and *uncontrolled discharge*.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

Tas F1.1 Application

- (1) *Performance Requirements* Tas FP1.1 to Tas FP1.4 are satisfied by complying with Tas F1.2.

Tas F1.2 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a roof *drainage* system must comply with—
- (a) AS/NZS 3500.3; or
 - (b) the acceptable construction practice of Part 3.5.2 of the Building Code of Australia Volume Two.

Tas Part F2 Surface and subsurface drainage systems

Introduction

Explanatory information:

Objective

Tas FO2

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 stormwater *drainage* installation; and
- (b) ensure that a stormwater *drainage* installation is adequate; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a stormwater *drainage* 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

Tas DF2.1

Buildings and their surroundings are to be provided with a surface *drainage* and subsurface *drainage* installation and be constructed in such a manner as to provide protection for people, property and the environment from the adverse effects of stormwater.

This Part sets out the requirements for the design, construction, installation, replacement repair, alteration and maintenance of any part of a surface *drainage* system to the *point of connection*.

Performance Requirements

Tas FP2.1 Surface drainage systems

- (1) A surface *drainage* system must have capacity to transfer an *average recurrence interval* of rainfall generated from

a storm.

- (2) The *average recurrence interval* for rainfall in Tas FP2.1(1) must be appropriate to the following:
- (a) The importance of the building
 - (b) The severity of potential damage to property, *loss* of *amenity*, illness or injury that would result from the failure of the system.

Tas FP2.2 Sub-surface drainage

- (1) A subsoil *drainage* system must remove excess groundwater and reduce soil moisture levels to prevent *loss* by changing soil moisture conditions.

Tas FP2.3 Design, construction and installation

- (1) A surface *drainage* installation must avoid the following:
- (a) *Blockage* and *uncontrolled discharge*.
 - (b) Damage from root penetration, superimposed loads or ground movement.
 - (c) Entry of sewage and/or liquid trade waste.
 - (d) Entry of stormwater into a sanitary *drainage*.
 - (e) Damage to the *Network Utility Operator's drainage* system
 - (f) Foul air and gases accumulating in the stormwater system.
 - (g) *Loss* to buildings or property.
- (2) A surface *drainage* installation must ensure the following:
- (a) Access for maintenance and clearing blockages.
 - (b) Stormwater is transferred to a *point of connection*.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy

Tas F2.1 Application

- (1) *Performance Requirements* Tas FP2.1 to Tas FP2.3 are satisfied by complying with Tas F2.2.

Tas F2.2 General Requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a surface and subsurface *drainage* system must comply with—
- (a) AS/NZS 3500.3; or
 - (b) the acceptable construction practice of Part 3.1.2 of the Building Code of Australia Volume Two.

Tas Section G Heating, ventilation and air-conditioning systems

Tas Part G1 Heating ventilation and air-conditioning systems

Tas Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of mechanical heating, cooling and ventilation systems.

Explanatory information:

Objective

Tas GO1

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 heating, ventilation or air-conditioning installation; and
- (b) ensure that a heating, ventilation or air-conditioning 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 heating, ventilation or air-conditioning 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

Tas GF1.1

Mechanical services, plant and equipment used for heating, cooling and/or ventilation of a building must be adequate.

Tas GF2.2

A building's heating, cooling and/or ventilation system installation and maintenance must support energy efficient outcomes and minimise any adverse impact on building occupants or occupants of adjoining places, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

Tas GP1.1 Design, construction, installation and maintenance

- (1) A mechanical service, or plant and equipment for heating, cooling and/or ventilation must avoid the following:
 - (a) Damage to property.
 - (b) *Loss* of *amenity* to occupants.
- (2) A mechanical service, or plant and equipment for heating, cooling and/or ventilation must ensure the following:
 - (a) Efficient use of energy and water.
 - (b) Access for maintenance.

Tas GP1.2 Pressure equipment

- (1) Pressure equipment used in mechanical heating, cooling or ventilation systems must avoid the likelihood of explosion, rupture or leakage.

Tas GP1.3 Microbial control

- (1) Mechanical air-handling and cooling water systems installed in a building must control the accumulation of harmful microbial growth.

Verification Methods

There are no verification methods in this Part.

Deemed-to-Satisfy Provisions

Tas G1.1 Application

- (1) *Performance Requirements* Tas GP1.1 to Tas GP1.3 are satisfied by complying with Tas G1.2.

Tas G1.2 General requirements

- (1) Mechanical ventilation and air-conditioning systems for buildings and structures must comply with the requirements of the relevant Parts of:
 - (a) NCC Volume One for Class 2 to 9 Buildings; or
 - (b) NCC Volume Two for Class 1 and 10 Buildings.
- (2) Mechanical ventilation and air-conditioning equipment must be in accordance with:
 - (a) AS/NZS 1200,
 - (b) AS 1324.1 for the application, performance and construction for air filters for use in general ventilation and air-conditioning,
 - (c) AS 1345 for the identification of the contents of pipes, conduits and ducts,
 - (d) AS/NZS 1668.1 for the use of mechanical ventilation and air-conditioning in buildings for fire and smoke control in multi-compartment buildings,
 - (e) AS 1668.2 for the use of mechanical ventilation and air-conditioning in buildings for mechanical ventilation,
 - (f) AS/NZS 3500.1 for the design, installation, alteration, addition, repair and commissioning of cold water services,
 - (g) AS/NZS 3500.2 for the design, installation, alteration, addition and repair of sanitary *plumbing* and *drainage*,
 - (h) AS/NZS 3500.4 for the design, installation, commissioning, alteration, addition and repair of *heated water* services,
 - (i) AS 4254.1 for flexible ductwork for air-handling systems in buildings,
 - (j) AS 4254.2 for the rigid ductwork for air-handling systems in buildings,
 - (k) AS 4426 for the selection, installation and finish of thermal insulation of pipework, ductwork and equipment.
 - (l) AS 4508 for the thermal resistance of insulation for ductwork used in building air-conditioning, and
 - (m) AS 5601 for gas installations.
- (3) Copper piping for air-conditioning and refrigeration must meet the requirements of AS/NZS 1571.

Tas Section H On-site waste water systems

Tas Part H1 On-site waste water management systems

Tas Introduction to this Part

This Part sets out the requirements for the design, construction, installation, replacement repair, alteration and maintenance of any part of an *on-site wastewater management system*.

Explanatory information:

Objective

Tas HO1

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

Tas HF1.1

On-site wastewater management systems must collect, contain, treat and 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

Tas HP1.1 Health, environment and amenity

- (1) An *on-site wastewater management system* must ensure the following:
 - (a) Risks associated with the discharge of treated wastewater to the environment are minimised.
 - (b) Risks associated with the discharge of the end *product* of a composting toilet to the environment are minimised.
 - (c) Surface and ground water are not polluted.
 - (d) Soil productivity is maintained or enhanced.

Tas HP1.2 Infrastructure

- (1) Wastewater must be transferred to an *on-site wastewater management system* in a way that avoids the following:
 - (a) *Blockage* and *uncontrolled discharge*.
 - (b) Entry of foul air and gases into buildings.
- (2) Wastewater must be transferred to an *on-site wastewater management system* in a way that ensures the following:
 - (a) Safe and hygienic transfer of waste.
 - (b) Safe access for maintenance.

Tas HP1.3 On-site waste water management

- (1) An *on-site wastewater management system* must avoid the following:

- (a) Contamination of *drinking water*, soils, ground water and waterways.
 - (b) *Uncontrolled discharge*.
 - (c) Foul air and gases accumulating within or entering buildings.
 - (d) Unauthorised access by people.
 - (e) Entry of stormwater to the system.
- (2) An *on-site wastewater management system* must ensure the following:
- (a) Cleaning, maintenance, measurement and performance sampling can be conducted as appropriate.
 - (b) The manufacturer, model, serial number and designed capacity is easily identifiable after installation.
 - (c) Materials which are resistance to the water and waste that will be disposed.
 - (d) Appropriate treatment and storage capacity for the volume of waste and frequency of disposal.
 - (e) Appropriate size, strength and rigidity for the nature, flow rates, volume of wastes and/or waste products which must be processed.
 - (f) Vehicle access for the collection of waste water.
 - (g) The installation throughout its serviceable life will continue to satisfy the requirements of items [Tas HP1.3\(2\)\(a\)](#) to [Tas HP1.3\(2\)\(f\)](#).

Tas HP1.4 Land application systems

- (1) An *on-site wastewater management system* and associated land application system must avoid the following:
- (a) Damage from root penetration, superimposed loads or ground movement.
 - (b) Entry of water, foul air or gases from the system into buildings.
 - (c) Entry of stormwater to the system.
 - (d) *Blockage* and unintended or *uncontrolled discharge*.
- (2) An *on-site wastewater management system*, and any associated land application system must provide the following:
- (a) Protection against internal contamination.
 - (b) Access for maintenance and cleaning.
 - (c) Ventilation to avoid foul air and gases accumulation in the system.
- (3) A facility must continue to satisfy the requirement of items [Tas HP1.4\(1\)](#) – [Tas HP1.4\(2\)](#)

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

Tas H1.1 Application

- (1) *Performance Requirements* [Tas HP1.1](#) to [Tas HP1.4](#) are satisfied by complying with [Tas H1.2](#).

Tas H1.2 General requirements

- (1) The manufacture of septic tanks and their associated fittings for the treatment of domestic wastewater up to 14,000 litres per week must be in accordance with AS/NZS 1546.1.
- (2) Waterless composting toilets must meet the requirements of AS/NZS 1546.2.
- (3) The design, means of compliance and specification for testing of aerated wastewater treatment systems and associated fitting must be in accordance with AS/NZS 1546.3.
- (4) The design and installation of sanitary plumbing and drainage systems must be in accordance with AS/NZS 3500.2 and the requirements of this Part.

- (5) The design and sustainable management of domestic land application systems must be in accordance with AS/NZS 1547.
- (6) An *on-site wastewater management system* must be designed and constructed in accordance with a *Certificate of Accreditation* issued under Tas I102.
- (7) The installation of an *on-site wastewater management system* must comply with the additional installation requirements set out in Tas H101.

Tas Part H101 On-site wastewater management systems - additional requirements

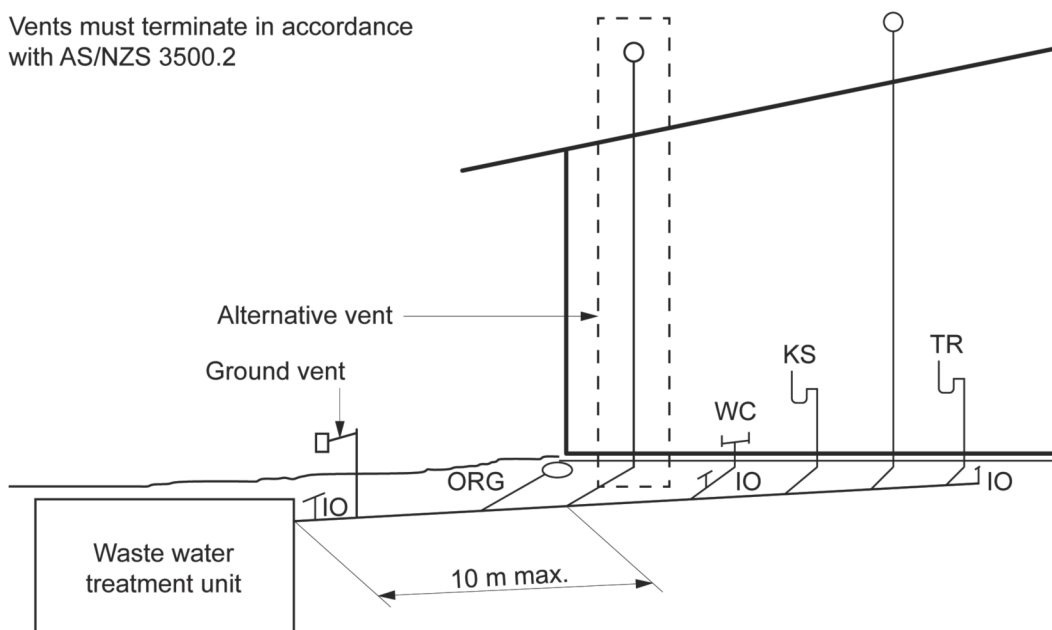
Tas H101.1 Scope

This Part is an addition to Tas Part H1 and sets out the requirements for the connection of water flushed *sanitary fixtures* and *sanitary appliances* to an *on-site wastewater management system* other than a *sewerage system*. It also sets out the installation requirements for *on-site wastewater management systems*.

Tas H101.2 Installation requirements

- (1) Installation must be in accordance with Tas Figure H102.2 and in accordance with Parts C1 and C2 for pipework and venting arrangements.
- (2) An overflow relief gully must be installed and positioned so as to provide protection against surcharge of waste into a building.
- (3) An alternative to the ground vent may be used by extending a vent to terminate as an upstream vent, with the vent connection between the last *sanitary fixture* or *sanitary appliance* and the *on-site wastewater management system*.
- (4) Inspection openings must be located at the inlet to an *on-site wastewater management system* treatment unit and the *point of connection* to the land application system and must terminate as close as practicable to the underside of an approved inspection opening cover installed at the finished surface level.
- (5) Access openings for desludging or maintenance of *on-site wastewater management system* treatment units must terminate at or above finished surface level.

Tas Figure H101.2 Alternative venting arrangements



Tas Part H102 On-site Domestic Wastewater Treatment Units — greywater treatment sys-

tems.

Tas H102.1 Application

This Part sets out the requirements for how greywater is managed for domestic premises in Tasmania. It also sets out classification levels and methods of disposal for each of the three options.

Tas H102.2 Installation requirements

- (1) A greywater re-use system may be achieved through any one of the following options:
 - (a) Treatments systems.
 - (b) Diversion.
 - (c) Manual Bucketing (exempt from [Tas H102.2](#)).

Note 1:

Options (a) and (b) must be designed by a suitably qualified designer in accordance with the Tasmania Occupational Licensing Act.

Explanatory information:

The type of option selected will depend on what the water is to be used for and how much land is available.

- (2) Option (a), treatment systems, must be designed, installed and maintained in accordance with AS/NZS 1546.4, the system must be accredited in Tasmania and maintained in accordance with the schedule of maintenance determined under the Tasmanian Building Act provisions.
- (3) Option (b), Diversion systems, must be designed, installed and maintained in accordance with AS/NZS 3500.2, the Tasmanian Consumer Building and Occupational Services — Guide to Domestic Greywater Re-use and the schedule of maintenance (as applicable) and as determined under the Tasmanian Building Act provisions and [Tas 5.3\(1\)\(c\)](#).
- (4) Option (c) there are no installation requirements.

Tas Part H2 On-site liquid trade waste systems

Tas Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of any part of a system of a property used for the on-site treatment, conveyance and/or disposal of liquid trade waste.

Performance Requirements

Tas HP2.1 Health, environment and amenity

- (1) An on-site liquid trade waste system must ensure the following:
 - (a) Risks associated with the discharge of treated liquid trade waste to the environment are minimised.
 - (b) Surface and ground water are not polluted.
 - (c) Soil productivity is maintained or enhanced.

Tas HP2.2 Transferral

- (1) Liquid trade waste must be conveyed within the disposal system and treatment devices in a way that avoids the following:
 - (a) *Blockage* and *uncontrolled discharge*.
 - (b) Entry of foul air and gases into buildings.
- (2) Liquid trade waste must be conveyed within the disposal system and treatment devices a way that ensures the following:
 - (a) Safe and hygienic transferral.

- (b) Safe access, as appropriate, for clearing *blockages*.

Tas HP2.3 Design, construction and installation

- (1) A trade waste treatment device must:
 - (a) Have appropriate treatment and storage capacity for the volume of waste and frequency of disposal.
 - (b) Be of the appropriate size, strength and rigidity for the nature, flowrates, volume of wastes, by-products and residues which must be processed.
 - (c) Have vehicle access, for collection.
 - (d) Be of an appropriate structural strength for where pedestrian or vehicular traffic is likely.
 - (e) Be constructed of materials which are resistant to water and the expected waste that will be disposed.
- (2) A trade waste treatment device must avoid the likelihood of the following:
 - (a) Contamination of drinking water, soils, ground water and waterways.
 - (b) Foul air and gases accumulating within or entering buildings.
 - (c) *Uncontrolled discharge*.
 - (d) Unauthorised access by people.
 - (e) Entry of stormwater to the sewerage system.

Application 1:

Tas HP2.3(2)(e) does not apply in cases where a contaminated stormwater discharge of limited volume is accepted by the *Network Utility Operator* as a trade waste.

- (3) A trade waste treatment device must be designed, constructed and installed to allow the following:
 - (a) Cleaning, maintenance, measurement and performance sampling provisions to the requirements of the Authority having Jurisdiction.
 - (b) Identification of the manufacturer, model, serial number and capacity after installation.
- (4) A trade waste treatment device must continue to satisfy the requirements of items Tas HP2.3(1) – Tas HP2.3(3) throughout its expected lifetime.
- (5) be a trade waste treatment device approved by the receiving Network Utility Operator or for on-site disposal the Authority having jurisdiction.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

Tas H2.1 Application

- (1) *Performance Requirements* Tas FP2.1 to Tas HP2.3 are satisfied by complying with Tas H2.2.

Tas H2.2 General requirements

- (1) Where pre-treatment facilities are *required*, they must comply with the requirements of the authority having jurisdiction, including receiving *Network Utility Operator* (where relevant) and those responsible for occupational health and safety, dangerous goods management and environmental protection.
- (2) Where the written agreement of the authority having jurisdiction and the receiving *Network Utility Operator* is required, the liquid trade waste systems and pre-treatment facilities are to comply with the requirement of the authority having jurisdiction and the receiving *Network Utility Operator*.
- (3) Where pre-treatment facilities are not required by the *Network Utility Operator* or the permit authority, Tas HP2.2 or Tas HP2.3 must comply with AS/NZS 3500.2 and Tas Part H201 and Tas Part H202 as appropriate.

- (4) If a *Network Utility Operator* accepts the discharge of a liquid trade waste to their *sewerage system* after pre-treatment—
 - (a) the pre-treatment equipment or system is deemed to satisfy the *Performance Requirements* of Tas HP2.1 – Tas HP2.3, if the equipment or system is capable of discharging liquid trade waste at a quality set under a Consent to Discharge issued for that equipment or system by the *Network Utility Operator*; and
 - (b) that part of the installation used to convey the liquid trade waste after treatment must comply with AS/NZS 3500.2, Tas H201, Tas H202, and the *Network Utility Operator's* Guidelines, insofar as the provisions relate to the system.
- (5) The use of a *product* or system must comply with the details described in Tas H201 and Tas H202 insofar as they relate to the *product* or system installed in systems not connected to the *Network Utility Operator's* infrastructure.
- (6) The use of a *product* or system must comply with the details described in Tas H201, Tas H202 and the *Network Utility Operator's* Guidelines, insofar as they relate to the *product* or system installed in systems connected to the *Network Utility Operator's* infrastructure.

Explanatory information: Cross-volume considerations

Part B1 of NCC Volume One sets out requirements relevant to the excavation of pipework adjacent to a building and footings for the purpose of installing liquid trade waste systems in Class 2 to 9 buildings

Tas Part H201 Roofing of liquid trade waste generation areas

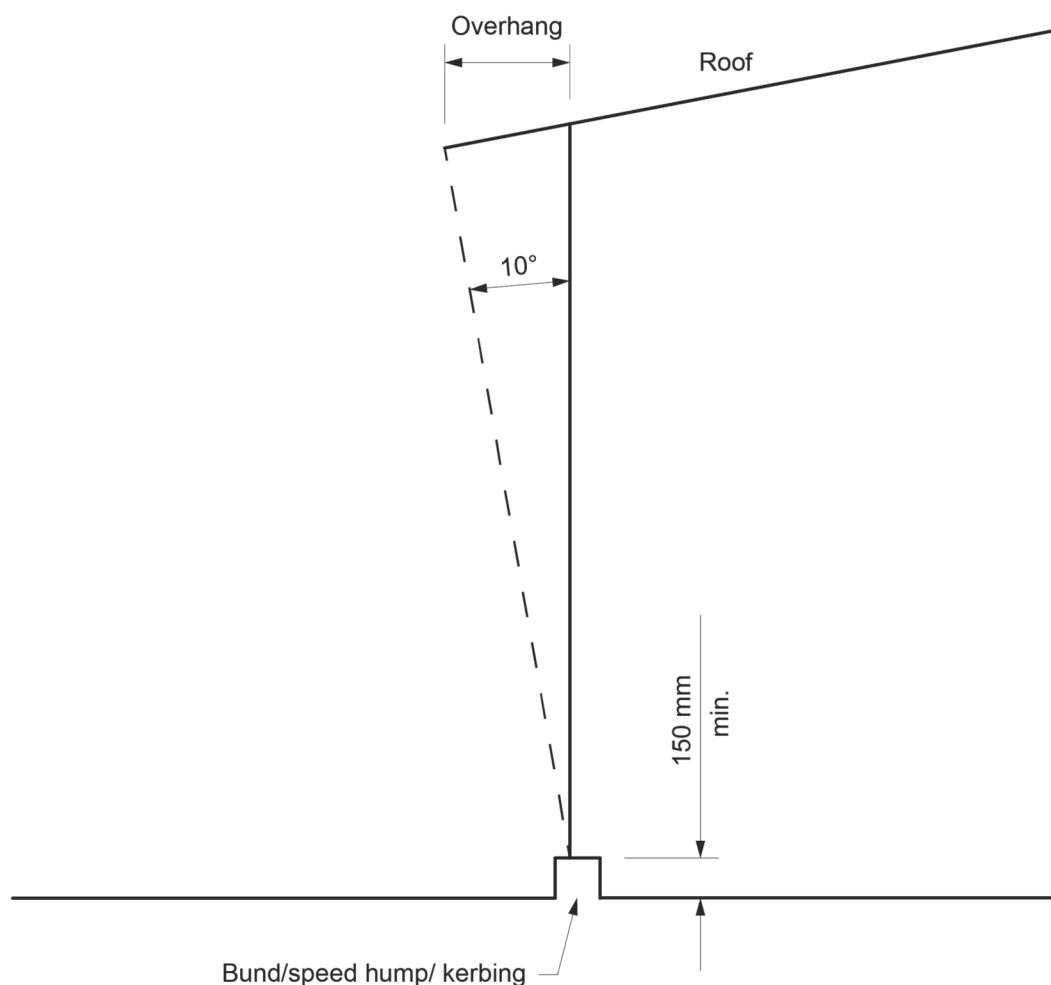
Tas H201.1 Scope

- (1) This Part is an addition to Tas Part H2 and sets out the requirements for the roofing of liquid trade waste generation areas to prevent entry of stormwater to an *approved disposal system* other than a *sewerage system*.
- (2) Roofing requirements for systems connected to the *Network Utility Operator's* sewerage system must as a minimum comply with Tas Figure H201.2.

Tas H201.2 Installation requirements

- (1) When a liquid trade waste generating process does not fully occur within a building, suitable roofing must be installed to prevent the entry of stormwater to the disposal system. For a structure where one or more sides are open to the weather, at least 10 degrees from the vertical overhang of the roofing must be provided.
- (2) To ensure that surface water cannot flow onto the liquid trade waste generating process area a bund or other feature (speed hump) at least 150 mm high around the area must be installed. On the upper side of the area, stormwater drains alone are not adequate as stormwater flows will often bridge over the grate and enter the process area. The overall surface water flow across the site is to be considered and the height of the bund or other feature must be increased where the calculated stormwater flow will enter the process area.
- (3) This design is likely to allow wind driven rainwater to enter under the roof in extreme storm conditions. The roof must overhang by an amount not less than that shown in Tas Figure H201.2.

Tas Figure H201.2 Roofing of liquid trade waste generation areas



Tas Part H202 Liquid trade waste products

Tas H202.1 Scope

This Part is an addition to [Tas Part H2](#) and depicts low risk trade waste [products](#) and installations connected to an [approved disposal system](#) other than a [sewerage system](#).

Tas H202.2 Application

- (1) This Part applies to trade waste installations not connected to a [Network Utility Operator's](#) system.
- (2) Trade waste [products](#) or installations depicted in [Tas Section H](#) are considered low risk and may be used if they are installed in accordance with the details shown therein and the following.
- (3) Low risk liquid trade wastes can be described as those water-borne discharges — other than sewage — that are classified by the permit authority as presenting a low risk to cause harm to the environment and [on-site wastewater management systems](#). These discharges must be trapped and partially treated before being permitted to enter the [on-site wastewater management system](#).

Explanatory information:

Examples of low risk liquid trade wastes are discharges from—

1. food preparation in take-away shops, restaurants, hotels, motels and the like;
2. laboratories in education institutions such as schools and universities; or
3. service stations, vehicle detailing and washing.

It is the role of the permit authority to determine whether the trade waste discharge is high risk or low risk when installed in areas outside the jurisdiction of the [Network Utility Operator](#).

Tas H202.3 General installation requirements

(1) **Location**

Low-risk trade waste appliances must be located as close as practicable to the fixtures and floor waste gullies served whether installed internally or externally and may be above or below ground. Portable appliances may only be installed above ground.

(2) **Covers**

Trade waste appliances must be fitted with covers which can withstand vehicular or pedestrian traffic or other loads likely to be imposed on them and be easily removable by one person.

(3) **Materials**

Trade waste appliances must be constructed of materials suitable for the nature of the liquid wastes likely to be discharged through the appliance.

(4) **Ventilation**

Where airtight covers are fitted, trade waste appliances must be vented with either a DN 50 or DN 80 vent (refer to relevant figure). Outlet ventilation is to be provided by either a—

- (a) DN 100 riser from a disconnector gully outside a building (refer clause 4.6.2 AS/NZS 3500.2); or
- (b) DN 50 vent from a disconnector gully at the outlet of a non-portable appliance inside a building (refer clause 4.6.5 AS/NZS 3500.2); or
- (c) DN 50 vent from a DN 80 trap riser at the outlet of a portable appliance, inside a building (refer clause 4.6.5 AS/NZS 3500.2).

Trade waste appliance vents and outlet vents may be combined inside a building (refer clause 6.8.3 AS/NZS 3500.2).

(5) **Connections**

Unless otherwise permitted by the permit authority, the [plumbing](#) and [drainage](#) installation upstream of a low-risk trade waste appliance must comply with AS/NZS 3500.2 and be compatible to the nature of the waste.

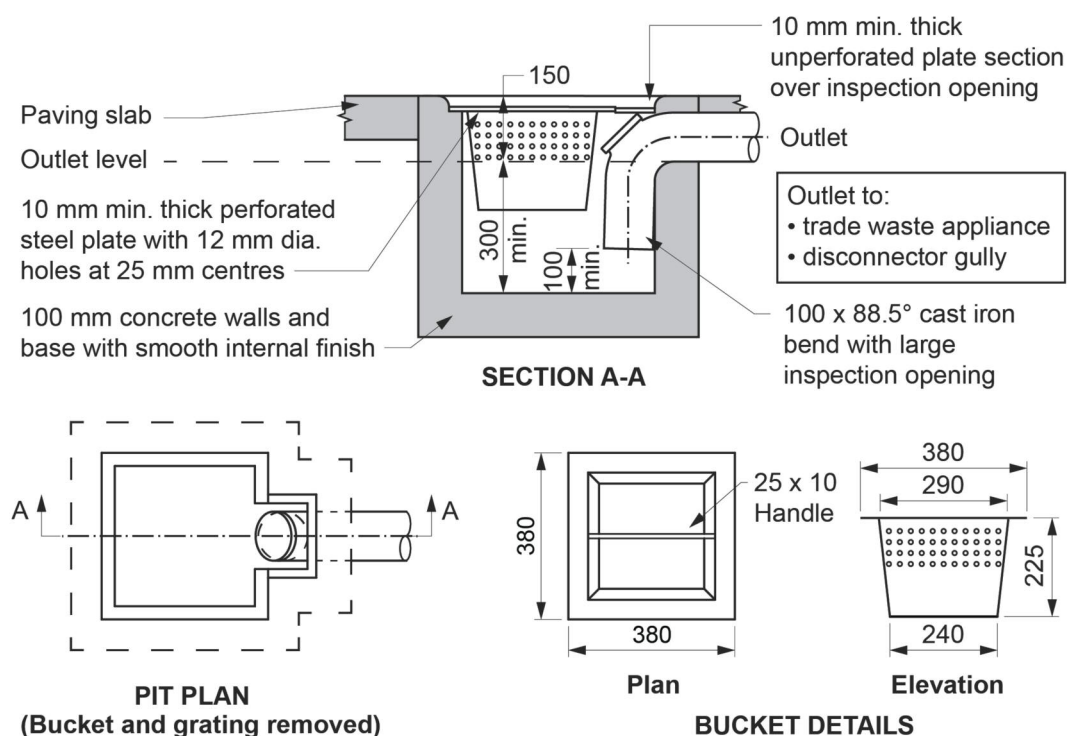
A trap must be fitted to the outlet pipe of every appliance and sized as follows—

- (a) DN 50 minimum for a portable appliance with hydraulic loading up to 5 fixture units.
- (b) DN 80 minimum for a portable appliance with hydraulic loading greater than 5 fixture units
- (c) DN 100 minimum for all other appliances.

Tas H202.4 Installation diagrams and notes

The low risk trade waste products and installations depicted below may be used if they are installed in accordance with the diagrams and notes shown.

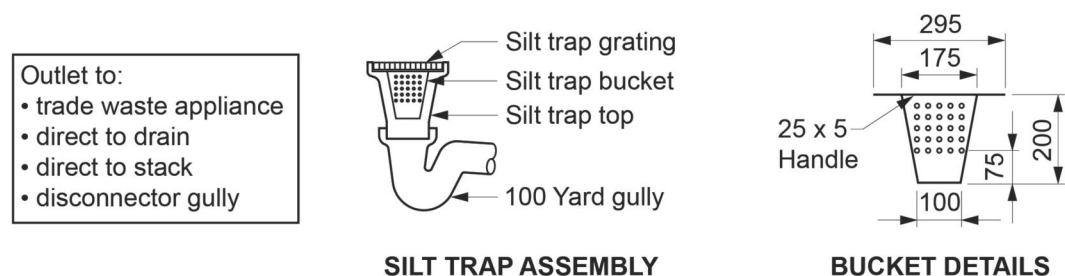
Tas Figure H202.4a Typical silt pit



Notes:

1. The silt pit is to be connected as specified by the designer and authorised by the [Permit Authority](#).
2. The bucket is to be constructed of mild steel plate, a minimum of 3 mm thick with 4 rows of 10 mm diameter holes at 25 mm centres. The bucket must be hot dip galvanised after fabrication.
3. Sizes shown are minimum permissible dimensions.
4. All dimensions shown are in millimetres.

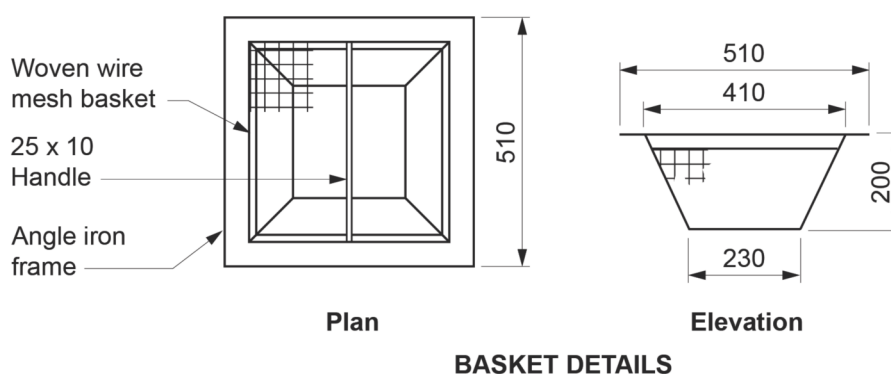
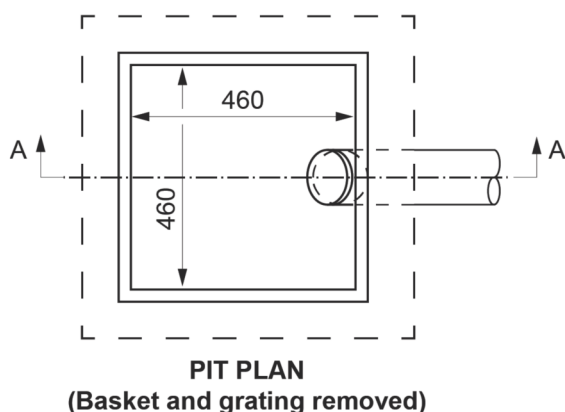
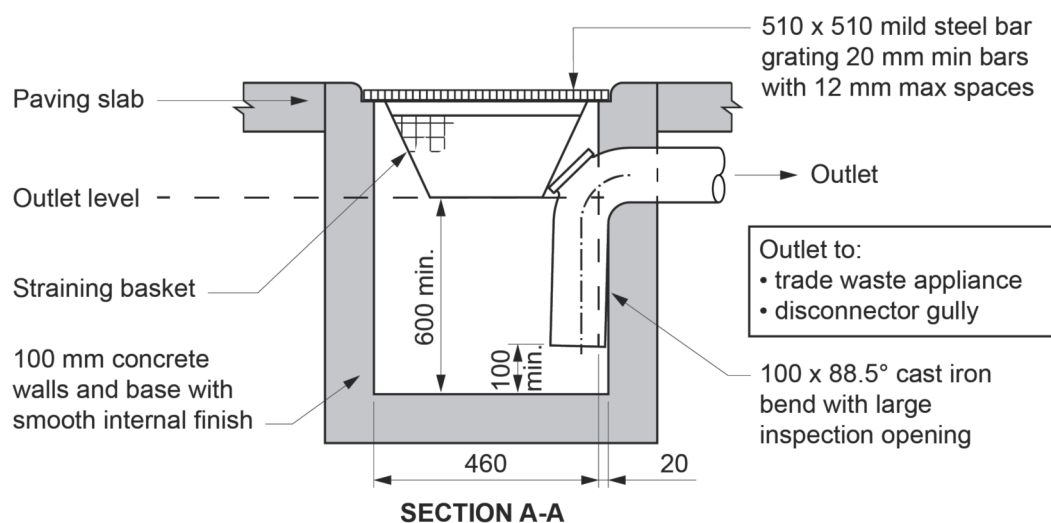
Tas Figure H202.4b Typical silt trap



Notes:

1. The silt trap is to be connected as specified by the designer and authorised by the [Permit Authority](#).
2. The bucket is to be constructed of mild steel plate, a minimum of 3 mm thick with 5 rows of 10 mm diameter holes at 25 mm centres. The bucket must be hot dip galvanised after fabrication.
3. Sizes shown are minimum permissible dimensions.
4. All dimensions shown are in millimetres.

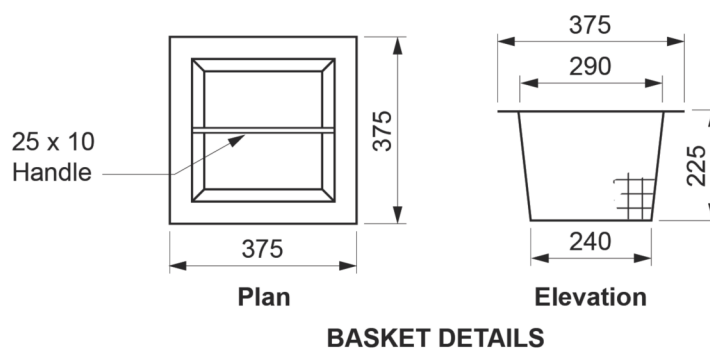
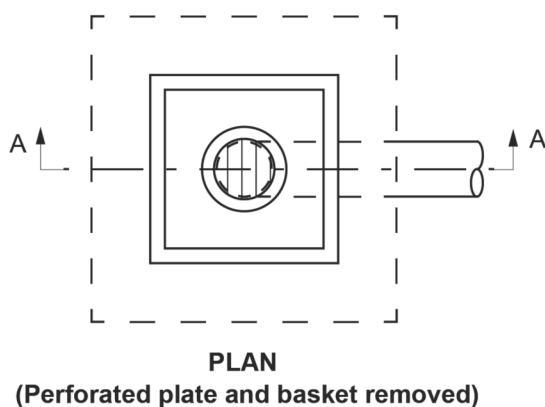
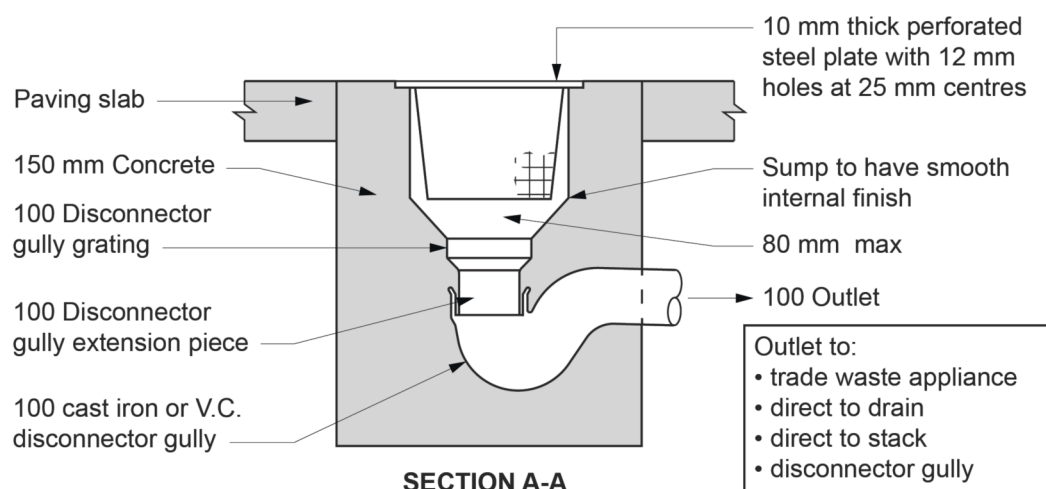
Tas Figure H202.4c Typical straining pit



Notes:

1. The straining pit is to be connected as specified by the designer and authorised by the [Permit Authority](#).
2. The basket is to be constructed of mild steel wire — a minimum of 2.5 mm in diameter — woven to give 7 mm aperture widths on a 32 x 32 x 3 mm angle iron frame with mitred corners. The top is to be welded from angle iron frame. The basket is to be hot dip galvanised after manufacture. Alternatively the basket may be constructed from mild steel plate a minimum of 3 mm thick with 6 mm diameter holes at 12 mm centres over the entire area of the basket. The basket is to be hot dip galvanised after manufacture.
3. All dimensions are in millimetres.

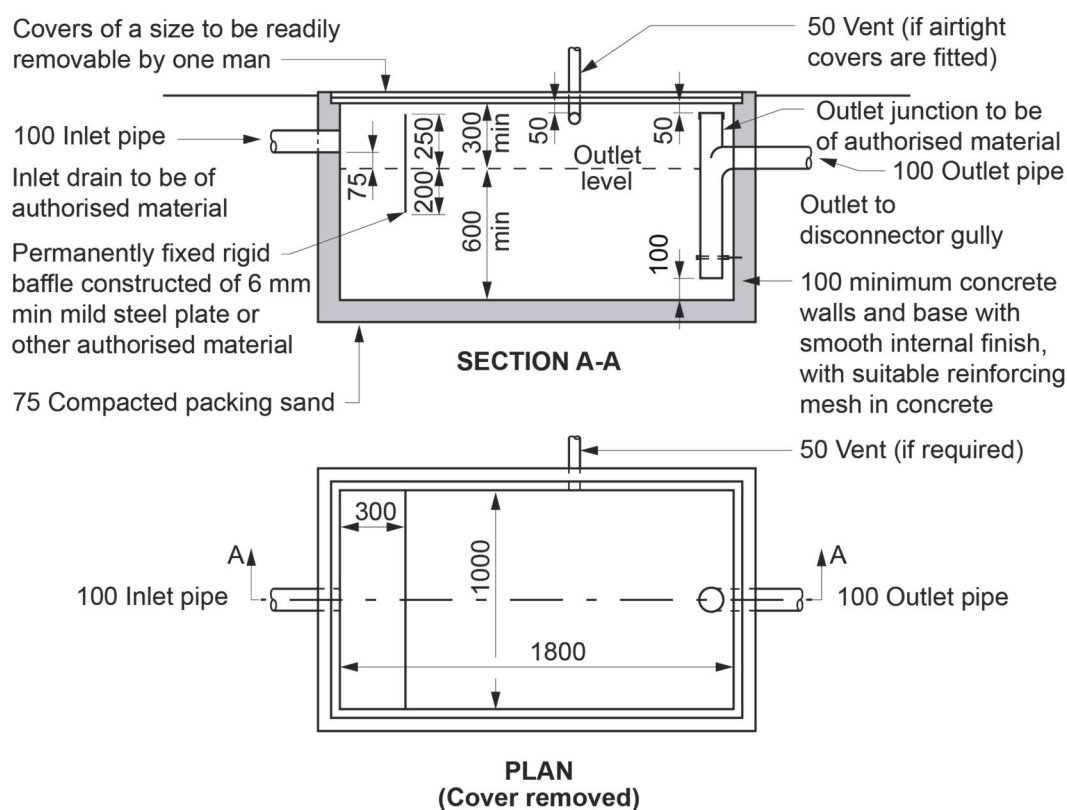
Tas Figure H202.4d Typical straining trap



Notes:

1. The straining trap is to be connected as specified by the designer and authorised by the [Permit Authority](#).
2. The basket is to be constructed of mild steel wire — a minimum of 2.5 mm in diameter — woven to give 7 mm aperture widths on a 32 x 32 x 3 mm angle iron frame with mitred corners. The top is to be welded from angle iron frame.
3. The basket is to be hot dip galvanised after manufacture. Alternatively the basket may be constructed from mild steel plate, a minimum of 3 mm thick with 6 mm diameter holes at 12 mm centres over the entire area of the basket. The basket is to be hot dip galvanised after manufacture.
4. Straining traps to be used in installations connected to the [Network Utility Operator's](#) sewerage system must comply with the requirements of the [Network Utility Operator's](#) Guidelines for pre-treatment device requirements.
5. All dimensions are in millimetres.

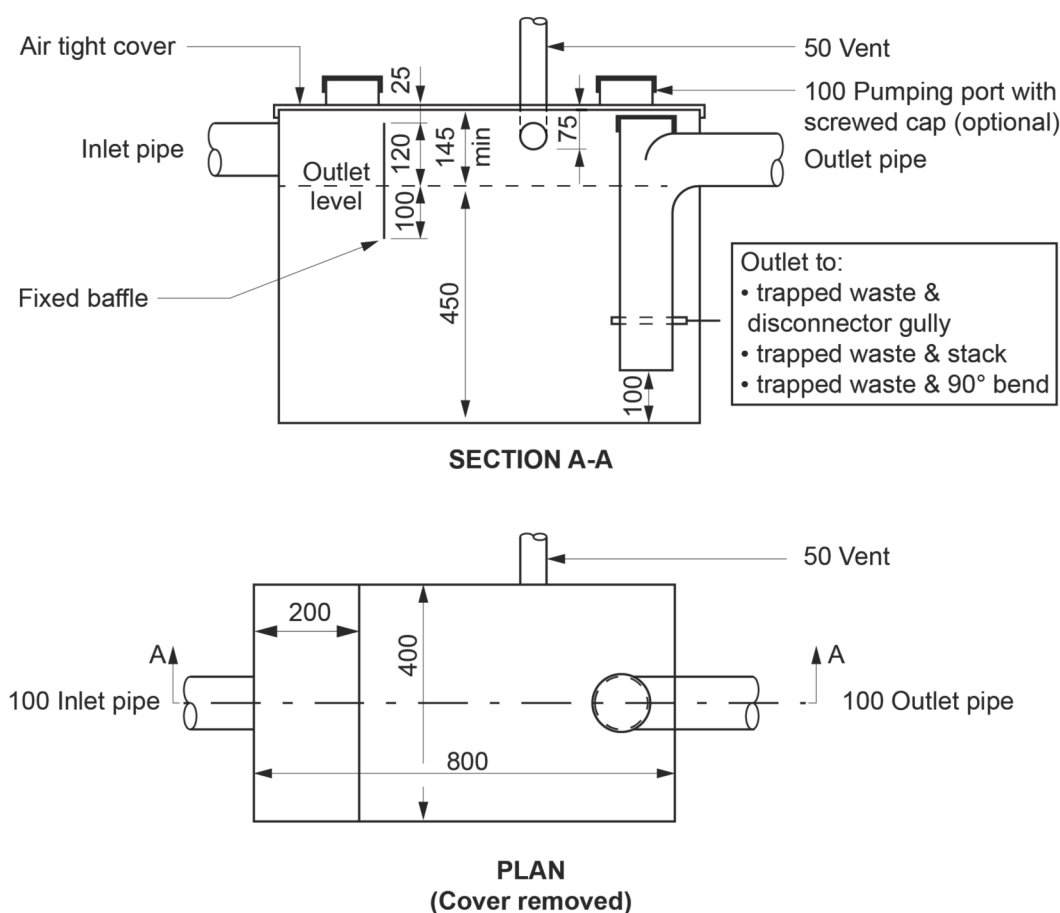
Tas Figure H202.4e Typical grease interceptor appliance (for above or below ground installation)



Notes:

1. The capacity of the grease interceptor appliance below the outlet is to be as specified in the design and authorised by the [Permit Authority](#). The capacity of the interceptor shown is 1080 L.
2. Where not specified, the capacity below the outlet is to be equivalent to the maximum hourly discharge provided that the minimum capacity below the outlet is at least 250 L.
3. As the contents of the unit may become slightly acidic, it is recommended that the internal concrete surfaces below outlet level be provided with an acidic resistant lining.
4. If installed above ground the grease interceptor appliance may be constructed using other authorised materials provided adequate structural support for the grease interceptor appliance is provided.
5. The grease interceptor appliance is to be located in a position so as to provide ready access for maintenance and inspection purposes.
6. Where a grease interceptor appliance is to be installed outside a building, consideration should be given to fitting airtight covers, venting the chamber and providing a screwed cap and DN 50 vent to the disconnector gully.
7. All dimensions are in millimetres.

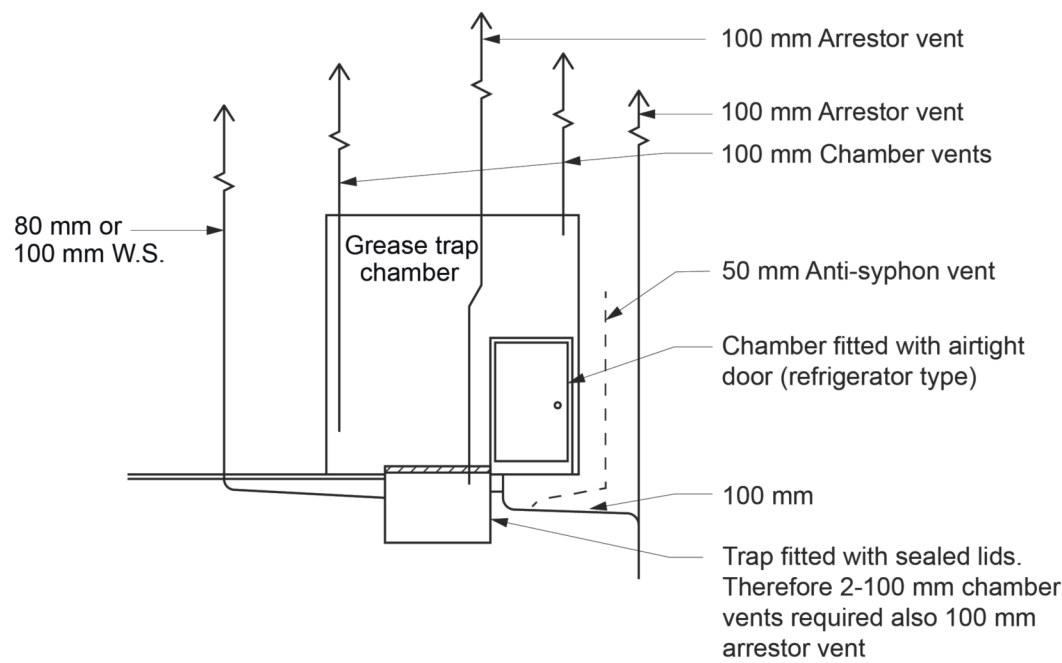
Tas Figure H202.4f Typical portable grease interceptor appliance (for above ground installation)



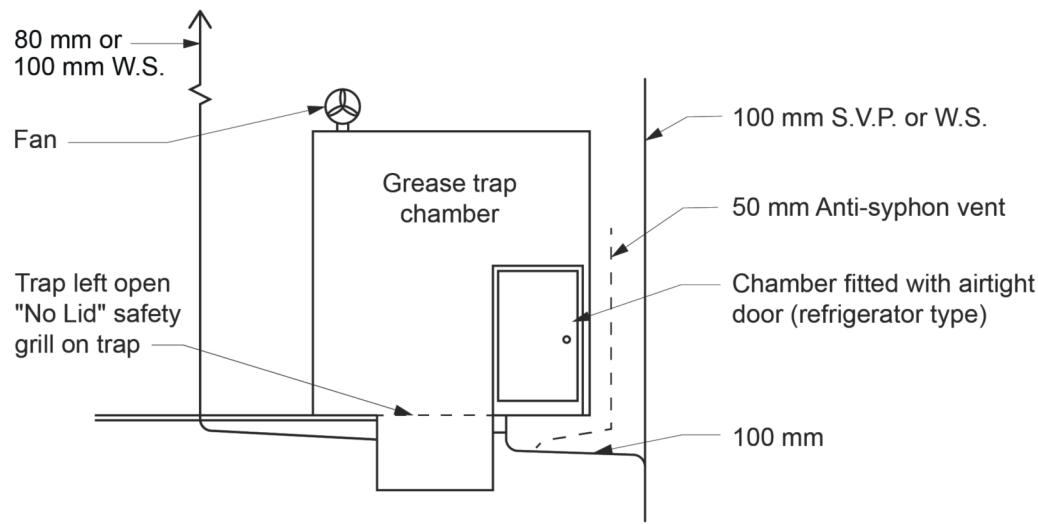
Notes:

1. The capacity of the grease interceptor appliance below the outlet is to be as specified in the design and authorised by the [Permit Authority](#). The capacity of the interceptor shown is 162 L.
2. Where not specified, the capacity below the outlet is to be equivalent to the maximum hourly discharge provided that the minimum capacity below the outlet is at least 100 L.
3. The interceptor and baffle is to be constructed of 6 mm unplasticised polyvinyl chloride (PVC-U); galvanised sheet steel with a minimum width of 0.79 mm; sheet copper or 316 grade stainless steel with a minimum width of 0.63 mm, all welded construction, or other authorised material.
4. Airtight cover(s) (using lever clips) to be provided to the grease interceptor appliance and the vent is to be extended to open air in accordance with clause 6.8.3 of AS/NZS 3500.2.
5. The grease interceptor appliance is to be located in a position so as to provide ready access for maintenance and inspection purposes.
6. If the grease interceptor appliance is to be installed externally it is to be protected from direct sunlight.
7. All dimensions are in millimetres.

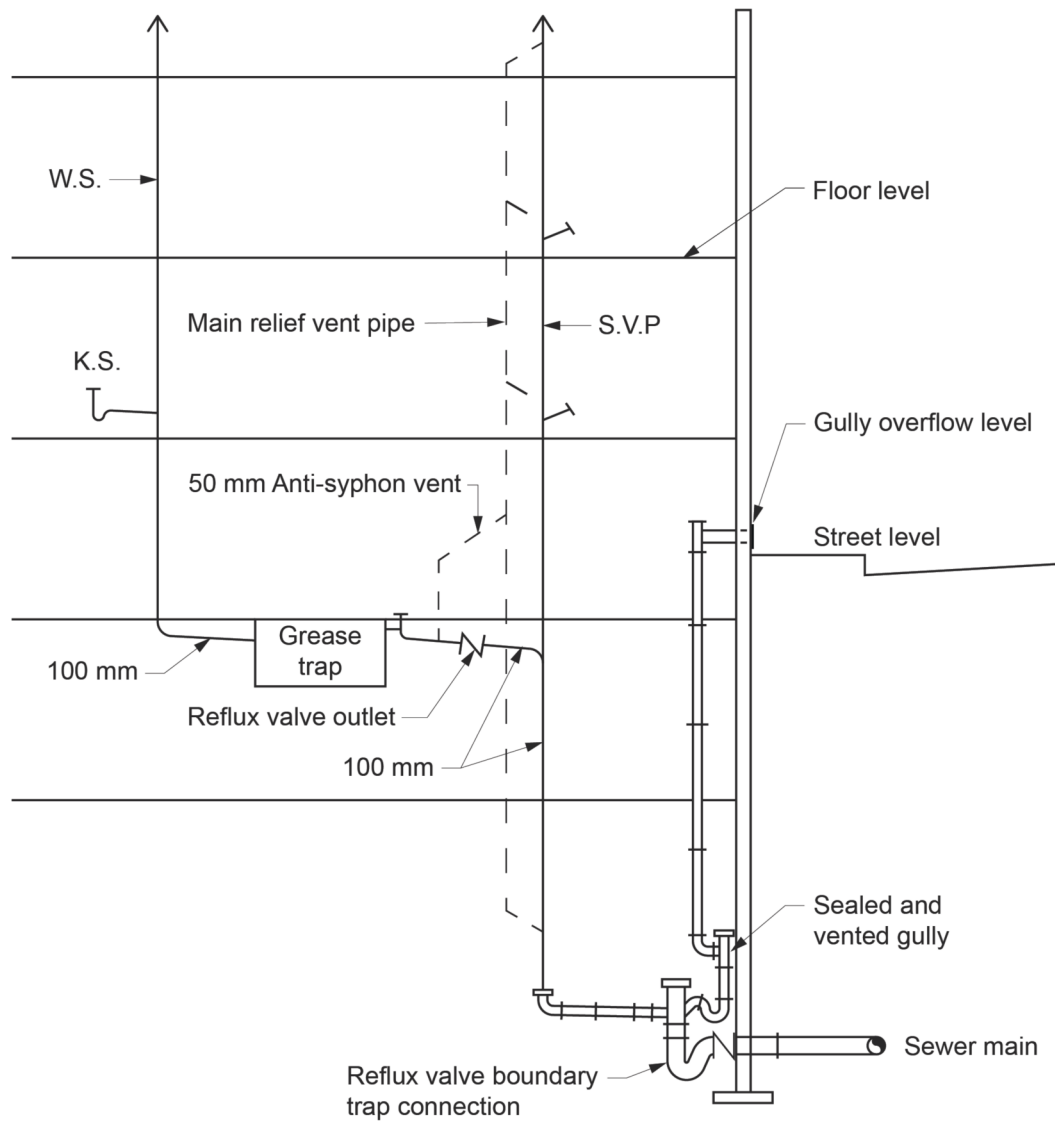
Tas Figure H202.4g Venting of grease trap chambers



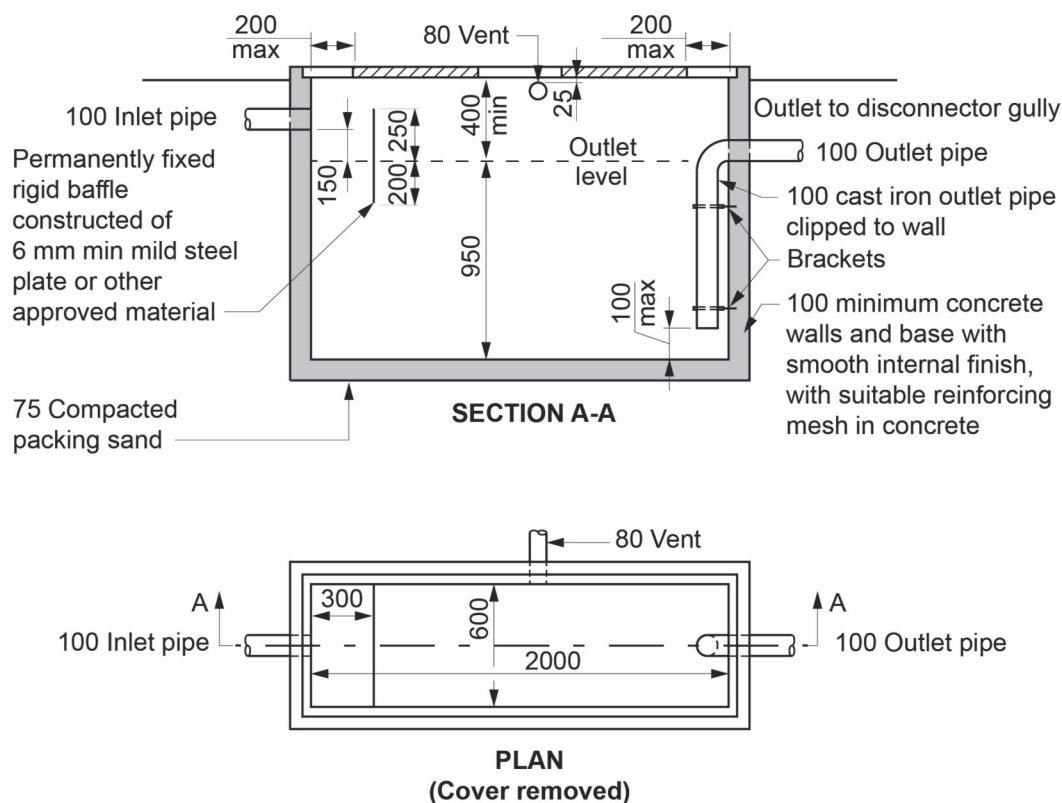
Tas Figure H202.4h Alternative (mechanical) venting of grease trap chambers



Tas Figure H202.4i Grease trap installation within multi-storey building



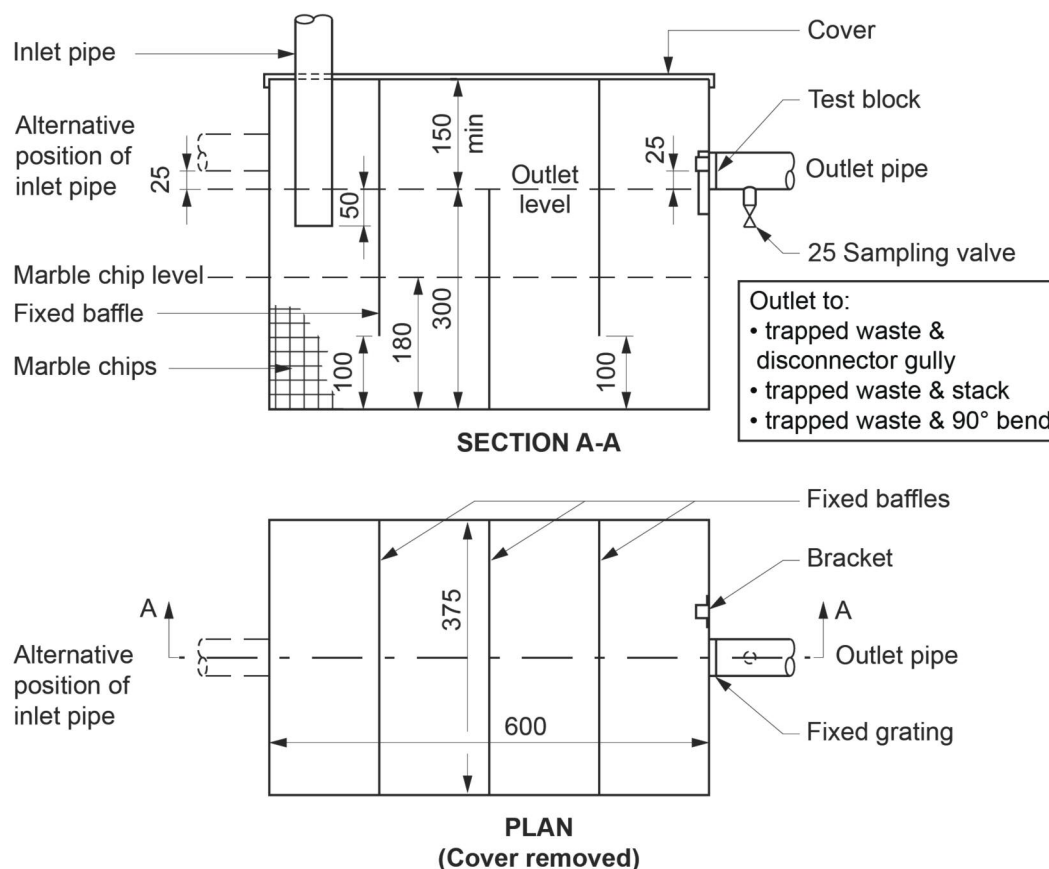
Tas Figure H202.4j Typical oil and petrol interceptor



Notes:

1. The capacity of the interceptor appliance below the outlet is to be as specified in the design and authorised by the [Permit Authority](#). The capacity of the interceptor shown is 1140 L.
2. Where not specified the capacity below the outlet is to be at least 1140 L.
3. Airtight covers are required and are to be of a suitable size and be readily removable by one person. A 600 mm x 600 mm or 600 mm diameter cover is required over the inlet and outlet of the pit.
4. Where subject to traffic loadings, suitable covers capable of withstanding such loads are to be provided.
5. The vent is to be extended to the open air in accordance with clause 6.8.3 of AS/NZS 3500.2.
6. The DN 100 cast iron pipe outlet fitting is to be manufactured in one piece.
7. PVC-U shall not be used for the construction, connecting or venting of this unit.
8. This interceptor may accumulate quantities of explosive and/or flammable materials and therefore care is to be exercised in the maintenance and general use of the interceptor.
9. The interceptor is to be located in a position so as to provide ready access for maintenance and inspection purposes.
10. Oil and petrol interceptors and/or treatment devices connected to the [Network Utility Operator's](#) sewerage system must comply with the requirements of the [Network Utility Operator's](#) Guidelines for pre-treatment device requirements.
11. All dimensions are in millimetres.

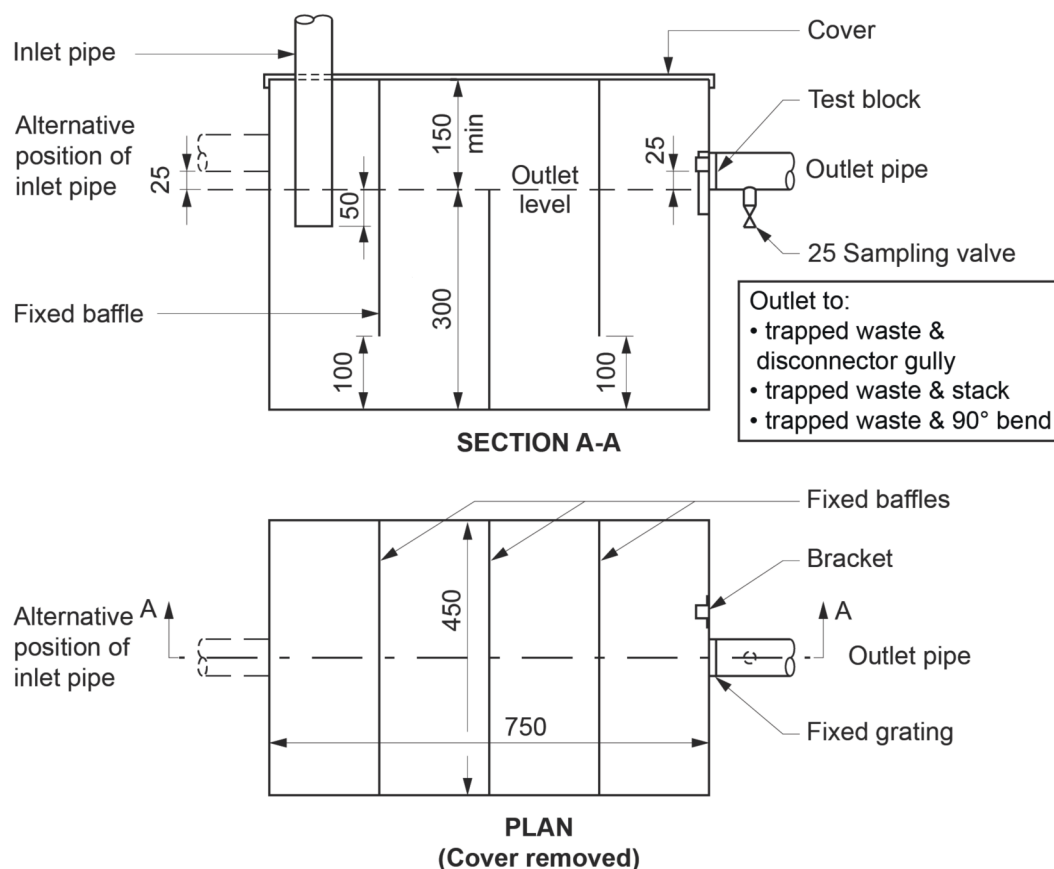
Tas Figure H202.4k Typical acid neutralising tank



Notes:

- The capacity of the tank below the invert level of the outlet pipe is to be as specified by the designer and authorised by the [Permit Authority](#). The capacity of the tank shown above is the minimum requirement of 27 L between the marble chip level and the outlet level.
- The tank and fixed baffles are to be constructed of unplasticised polyvinyl chloride (PVC-U) sheet with a minimum width of 6 mm; acid resistant stainless steel all welded construction with a minimum width of 0.63 mm; or other authorised acid and alkali resistant material and construction methods.
- The diameter of the outlet pipe is to be at least one size larger than the inlet pipe (i.e. DN 65 inlet – DN 80 outlet). Where the diameter of the inlet pipe is DN 100, the diameter of the outlet may be DN 100.
- The three baffles are to be equally spaced through the tank length.
- The 32 x 32 x 25 mm deep PVC-U test block bracket is to be fitted as close as practicable to the outlet.
- The 150 x 25 x 25 mm cement mortar test block is to be supplied and fitted to the satisfaction of the [Permit Authority](#).
- The size of the marble chips are to be within the range of 40 mm to 60 mm.
- The tank is to be located in a position so as to provide ready access for the fitting of the cement mortar test block, obtaining samples from the sampling valve, replacement of the marble chips and for ongoing maintenance purposes.
- Where the unit is to be located below ground level—
 - The unit is to be surrounded with thick concrete walls and base with a minimum of 100 mm.
 - The DN 25 sampling valve is to be omitted.
 - The outlet level is to be no greater than 600 mm below surface level.
 - The outlet pipe diameter is to be at least DN 100.
 - The outlet is to be connected to a disconnector gully fitted with a loose fitting grate or screwed cap.
- All dimensions are in millimetres.

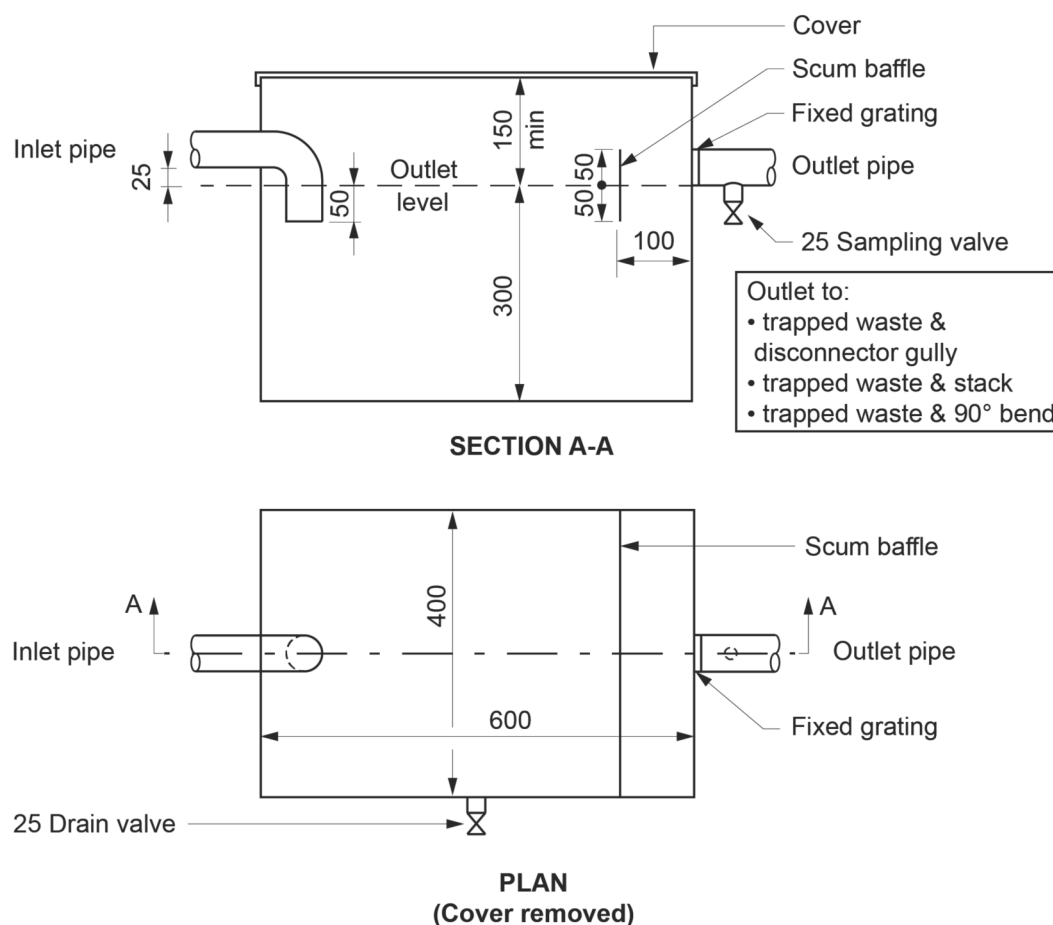
Tas Figure H202.4I Typical mixing tank



Notes:

1. The capacity of the tank below the invert level of the outlet pipe is to be as specified by the designer and authorised by the [Permit Authority](#). The capacity of the tank shown above is the minimum requirement of 100 L.
2. The tank and baffles are to be constructed of 6 mm min. unplasticised polyvinyl chloride (PVC-U) sheet; 0.63 mm min. acid resistant stainless steel all welded construction; or other authorised acid and alkali resistant material and construction methods.
3. The diameter of the outlet pipe is to be at least one size larger than the inlet pipe (i.e. DN 65 inlet – DN 80 outlet). Where the diameter of the inlet pipe is DN 100, the diameter of the outlet may be DN 100.
4. The three baffles are to be equally spaced through the tank length.
5. The 32 x 32 x 25 mm deep PVC-U test block bracket is to be fitted as close as practicable to the outlet.
6. The 150 x 25 x 25 mm cement mortar test block is to be supplied and fitted by the water authority's authorised officer.
7. Consideration should be given to the provision of adequate structural support for the tank.
8. The tank is to be located in a position so as to provide ready access for the fitting of the cement mortar test block, obtaining samples from the sampling valve, replacement of the marble chips and for ongoing maintenance purposes.
9. Where the unit is to be located below ground level—
 - a. The unit is to be surrounded with concrete walls and base, at least 100 mm thick.
 - b. The DN 25 sampling valve is to be omitted.
 - c. The outlet level is to be no greater than 600 mm below surface level.
 - d. The outlet pipe diameter is to be not less than DN 100.
 - e. The outlet is to be connected to a disconnector gully fitted with a loose-fitting grate or screwed cap.
10. All dimensions are in millimetres.

Tas Figure H202.4m Typical settling tank



Notes:

1. The capacity of the tank below the invert level of the outlet pipe is to be as specified by the designer and authorised by the [Permit Authority](#). The capacity of the tank shown above is the minimum requirement of 72 L.
2. The tank and baffles are to be constructed of unplasticised polyvinyl chloride (PVC-U) sheet a minimum of 6 mm thick; galvanised steel sheet a minimum of 0.79 mm thick; a minimum width of 0.63 mm or 316 grade stainless steel all welded construction; or other authorised acid and alkali resistant material and construction methods.
3. The diameter of the outlet pipe is to be at least one size larger than the inlet pipe (i.e. DN 65 inlet – DN 80 outlet). Where the diameter of the inlet pipe is DN 100, the diameter of the outlet may be DN 100.
4. The tank is to be located in a position so as to provide ready access for obtaining samples from the sampling valve and for ongoing maintenance purposes.
5. Where the unit is to be located below ground level:
 - a. The unit is to be surrounded with 100 mm min. thick concrete walls and base.
 - b. The DN 25 sampling valve is to be omitted.
 - c. The outlet level is to be no greater than 600 mm below surface level.
 - d. The outlet pipe diameter is to be not less than DN 100.
 - e. The outlet is to be connected to a disconnector gully fitted with a loose-fitting grate or screwed cap.
6. All dimensions are in millimetres.

Tas Section I

Materials and products certification and authorisation

Tas Part I101 Certification and authorisation - additional requirements

Introduction

This Part specifies the requirements that a *plumbing* or *drainage product* must meet to enable its use in a *plumbing* or *drainage* installation includes—

- (a) water *plumbing*;
- (b) roof *plumbing*;
- (c) sanitary *plumbing*;
- (d) heating, ventilation and air-conditioning *plumbing*;
- (e) *drainage* systems; and
- (f) *on-site wastewater management systems*, including on-site liquid trade waste installations.

Tas I101.1 Application

This Part applies to *plumbing* and *drainage products* used in new installations, alterations, additions and repairs and maintenance to existing installations.

Performance Requirements

Tas I101 P1

- (1) *Plumbing* and *drainage* materials and *products* must—
 - (a) be durable and fit for their intended purpose; and
 - (b) meet the *Performance Requirements* of the relevant Parts of the PCA; and
 - (c) be authorised.

Verification Methods

Tas I101 V1

- (1) Sanitary *plumbing* and *drainage products* may be verified as meeting the *Performance Requirements* of Tas I101 P1 if it is certified under the *WaterMark Certification Scheme* (see ABCB website for details).

Tas I101 V2

- (1) A *product* for use in a stormwater installation may be verified as meeting the *Performance Requirements* of Tas I101 P1 if it complies with the requirements of Section 2 of AS/NZS 3500.3.

Tas I101 V3

- (1) A *product* not covered by Tas I101 V1 or Tas I101 V2 may be authorised for use in Tasmania under Tas I101.5.

Tas I101 V4

- (1) A septic tank may be verified as meeting the *Performance Requirements* of Tas I101 P1 if it complies with AS/NZS 1546.1.

Tas I101 V5

- (1) A holding tank or collection well for use in a *plumbing* or *drainage* installation may be verified as meeting the *Performance Requirements* of Tas I101 P1 if it complies with AS/NZS 1546.1.

| |
|------------------------------|
| Deemed-to-Satisfy Provisions |
|------------------------------|

Tas I101.2 Application

- (1) *Performance Requirement Tas I101 P1* is satisfied by complying with *Tas I101.3*.

Tas I101.3 General requirements

- (1) A material or *product* used in a *plumbing* or *drainage* installation must be certified and authorized under the *WaterMark Certification Scheme* (see ABCB website for details), where specified under *A5.0*.
- (2) A unique *plumbing* material or product satisfies the *Performance Requirement* of *Tas I101 P1* if—
 - (a) authorised by the Director of Building Control; or
 - (b) a permit authority having jurisdiction authorizes the use of a unique *plumbing product* under a *plumbing* permit under the Tasmanian Building Act and independent third party certification in accordance with the Tasmanian Building Act has been obtained.
- (3) A unique *plumbing product* which is a septic tank must be constructed in accordance with AS/NZS 1546.1 and be independently certified by third party certification in accordance with the Tasmanian Building Act.
- (4) *Products* included on a list published by the Tasmanian Government for the purpose of this Part satisfy the *Performance Requirement* of *Tas I101 P1*.

Tas I101.4 State Authorisation

(1) Scope

This section applies to materials and *products* for use in water *plumbing*, roof *plumbing*, sanitary *plumbing* and *drainage* systems, *on-site wastewater management systems* – including on-site trade waste installations – and heating, ventilation and air-conditioning *plumbing*.

(2) Application

A unique *plumbing* material or product satisfies the *Performance Requirement* of *Tas I101 P1* if—

(3) Authorisation

A *plumbing product* is authorised for use in a *plumbing* installation in Tasmania if it has been authorized by the Director of Building Control or – in the case of a unique *plumbing product* – either by the Director of Building Control or the relevant permit authority.

Tas Part I102 On-site wastewater management system accreditation

Introduction

This Part sets out the requirements for the accreditation of *on-site wastewater management systems* to enable their installation and use in a *plumbing* installation.

Tas I102.1 Application

- (1) This Part applies to all *on-site wastewater management systems* except for systems—
 - (a) exempted under the Tasmania Plumbing Regulations; or
 - (b) under the jurisdiction of the Environmental Management and Pollution Control Act 1993; or
 - (c) which forms part of a water and sewerage authority's infrastructure.

| |
|--------------------------|
| Performance Requirements |
|--------------------------|

Tas I102 P1

- (1) An *on-site wastewater management system* must—
- (a) Be durable and fit for purpose;
 - (b) meet the *Performance Requirements* of the PCA; and
 - (c) Be issued with a *Certificate of Accreditation* in Tasmania under this Part.

Verification Methods**Tas I102 V1**

- (1) An *on-site wastewater management system* may be verified as meeting the *Performance Requirements* of this Part if a *Certificate of Accreditation* for the system has been issued.

Deemed-to-Satisfy Provisions**Tas I102.2 Application**

- (1) *Performance Requirement Tas I102 P1* is satisfied by complying with *Tas I102.3*.

Tas I102.3 General requirements

- (1) An *on-site wastewater management system* used in a *plumbing* installation must be issued with a *Certificate of Accreditation*.

Schedule 3 Definitions

Definitions

Insert definition for *accreditation* as follows:

Accreditation means in respect of an *on-site wastewater management system*, the process of accreditation by the Director of Building control.

Insert definition for *certificate of accreditation* as follows:

Certificate of Accreditation means a certificate issued under *Tas Part I102* by the Director of Building control stating that a *plumbing* or *drainage* system meets the *Performance Requirements* of the relevant Parts of the PCA.

Replace definition of *Expert Judgement* and the explanatory information as follows:

Expert Judgement means 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* as to what will be accepted.

Replace definition of *Network Utility Operator* and the explanatory information as follows:

Network Utility Operator means 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* is the water and sewerage authority licensed to supply water and supply water and receive sewage and/or stormwater in Tasmania. 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 water and sewerage authority for water and sewerage, or the relevant council, for on-site waste water management and stormwater systems.

Replace definition of *on-site wastewater management system* as follows:

On-site wastewater management system means on-site wastewater management system as defined by the *Tasmanian Building Act*.

Insert definition of *Permit Authority* as follows:

Permit Authority means a permit authority as defined by the *Tasmanian Building Act*.

Replace definition of *professional engineer* as follows:

Professional engineer means 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.

Replace definition of *recognised expert* as follows:

Recognised expert means a person with qualifications and expertise in the area of *plumbing* and *drainage* in question, as determined by the Director of Building Control.

Replace definition for *registered testing authority* as follows:

Registered Testing Authority means—

- (a) an organisation registered by the National Association of Testing Authorities (NATA) to test in the relevant field; or
- (b) an organisation outside Australia registered by an authority recognized by NATA through a mutual recognition agreement.

Insert definition for *sanitary appliance* as follows:

Sanitary appliance means an appliance which is intended to be used for *sanitation*, but which is not a *sanitary fixture*. Included are machines for washing dishes, glasses and washing clothes and the like.

Insert definition for *sanitary fixture* as follows:

Sanitary fixture means a fixture which is intended to be used for *sanitation*.

Insert definition for *sanitation* as follows:

Sanitation means the activities of washing or excretion carried out in a manner or condition such that the effect on health is minimised, with regard to dirt and infection.

Insert definition for *sewerage system* as follows:

Sewerage system means a sewerage system as defined in the Plumbing Regulations.

Insert definition for *unique plumbing product* as follows:

Unique plumbing product means a *plumbing* or *drainage* product that is—

- (a) a prototype; or
- (b) made on-site; or
- (c) purpose built and the only one of its type; or
- (d) imported from outside Australia for a one-off use; or
- (e) determined by the Director of Building Control to be a *unique plumbing product*.

Preview

Schedule 4 Referenced documents

Schedule of referenced documents

Where a new edition, issue or amendment of a primary referenced document is not listed under Schedule 4, for the purposes of the PCA the new addition, issue or amendment shall be referenced upon the publication of that addition, issue or amendment.

In Table 1, insert additional references as follows:

Tas Table 1 Schedule of referenced documents

| Document No. | Date | Title | PCA Clause |
|--------------------|------|---|--|
| AS/NZS 1546 Part 1 | NA | On-site domestic wastewater treatment units — Septic tanks | C2.2, Tas H1.2, Tas G101 V4, Tas G101 V5, Tas G101.4 |
| AS/NZS 1546 Part 2 | NA | On-site domestic wastewater treatment units — Waterless composting toilets | C2.2, H1.2 |
| AS/NZS 1546 Part 3 | NA | On-site domestic wastewater treatment units — Aerated wastewater treatment systems | C2.2, H1.2 |
| AS/NZS 1546.4 | NA | Domestic Greywater Treatment Systems | Tas H102.2 |
| AS/NZS 1547 | NA | On-site domestic wastewater management | C2.2, H1.2 |
| AS 2070 | NA | Plastics materials for food contact use | Tas B101.3 |
| AS/NZS 2179 Part 1 | NA | Specifications for rainwater goods, accessories and fasteners — Metal shape or sheet rainwater goods, and metal accessories and fasteners | Tas B101.3 |
| AS/NZS 3500 Part 1 | NA | Plumbing and drainage — Water services | B1.2, Tas B101.3, B3.2, B4.2, Tas G1.2 |
| AS/NZS 3500 Part 3 | NA | Plumbing and drainage — Stormwater drainage | A2.1, Tas B101.3, Tas F1.2, Tas F2.2 |
| AS 3600 | NA | Concrete structures | Tas B101.3 |
| AS 3735 | NA | Concrete structures retaining liquids | Tas B101.3 |
| AS/NZS 4020 | NA | Testing of products in contact with drinking water | A2.1, Tas B101.3 |
| AS/NZS 4130 | NA | Polyethylene (PE) pipes for pressure applications | Tas B101.3 |
| AS/NZS 4766 | NA | Polyethylene storage tanks for water and chemicals | Tas B101.3 |
| ATS 5200.026 | NA | Technical Specification for plumbing and drainage products: Cold water storage tanks | Tas B101.3 |

Tas Table 2 The following references are informative only

| Document No. | Date | Title | PCA Clause |
|----------------------|------|--|------------|
| HB 230 | 2008 | Rainwater tank design and installation handbook | Tas B101.3 |
| enHealth | 2010 | Guidance on the use of rainwater tanks | Tas B101.3 |
| TasWater | 2015 | TasWater Boundary Backflow Containment Requirements | Tas B1.2 |
| Greywater Guidelines | NA | Tasmanian Consumer Building and Occupational Services—Guide to Domestic Greywater Re-use | Tas H102.2 |

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.

Preview

Victoria

Section B Water services

Section C Sanitary plumbing and drainage systems

Section D Excessive noise

Vic Section F Stormwater drainage systems

Vic Section G Heating, ventilation and air-conditioning systems

Vic Section H Low risk on-site liquid trade waste systems

Footnote: Other legislation affecting buildings

Victoria

Section B Water services

- Vic B1.4 General requirements
- Vic B2.2
- Vic B2.9 General requirements
- Vic B3.3 General Requirements
- Vic B4.2 General requirements

Section C Sanitary plumbing and drainage systems

- Vic C1.3 General requirements
- Vic CP2.101 No point of connection
- Vic CV2.1 Flow rate, liquid-to-air ratio and pressure testing
- Vic CV2.2 * * * * *
- Vic C2.4 General requirements

Section D Excessive noise

- Vic DP1.1 Undue noise
- Vic DP1.2 * * * * *
- Vic D1.1 Application

Vic Section F Stormwater drainage systems

- Vic FP1.1 Roof drainage systems
- Vic FP1.2 Overflow
- Vic FP1.3 Watertightness
- Vic FP1.4 Design, construction and installation
- Vic F1.1 Application
- Vic F1.2 General requirements
- Vic FP2.1 Surface drainage systems
- Vic FP2.2 Design, construction and installation
- Vic F2.1 Application
- Vic F2.2 General Requirements

Vic Section G Heating, ventilation and air-conditioning systems

- Vic GP1.1 Design, construction, installation and maintenance
- Vic GP1.2 Pressure equipment
- Vic GP1.3 Microbial control
- Vic G1.1 Application
- Vic G1.2 General requirements

Vic Section H Low risk on-site liquid trade waste systems

- Vic H1.1 Requirements for low risk on-site liquid trade waste management practices

Footnote: Other legislation affecting buildings

1. Relevant Legislation

Section B Water services

Part B1 Cold water services

Delete Introduction to this Part and insert Vic Introduction to this Part as follows:

Vic 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 cold water service that is connected to the *drinking water* supply. It covers from the *point of connection* to the points of discharge.

This part also applies to a cold water service connected to a *rainwater harvesting system*.

Delete B1.4(1) insert B1.4(1), (2) and (3) as follows—

Vic B1.4 General requirements

- (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 degrees Celsius.
- (3) A hose tap must be provided in men's public toilets adjacent to the urinals.

Part B2 Heated water services

Delete Introduction to this Part and insert Vic Introduction to this Part as follows:

Vic 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 that is connected to the *drinking water* supply. It covers from the *point of connection* to the points of discharge.

Performance Requirements

Delete BP2.6(1), (2) and (3) and insert Vic BP2.6(1), (2) and (3) as follows—

Vic BP2.6

- (1) A solar water heater system installed in a new Class 1 building must comply with the Plumbing Regulations 2018.
- (2) * * * * *
- (3) * * * * *

Verification Methods

Delete BV2.1 and insert Vic BV2.1 as follows:

Vic BV2.1

This *Verification Method* is deleted.

Delete B2.2 and insert Vic B2.2 as follows:

Vic B2.2

- (1) A solar water heater system installed in a new Class 1 building must comply with the *Plumbing Regulations 2018*.

Delete B2.9(1) and insert Vic B2.9(1) as follows:

Vic B2.9 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a *heated water* service must be in accordance with the following:

(a) AS/NZS 3500.4 including the following additions:

(i) Insert after clause 1.1.12:

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; and

(ii) Insert after clause 4.2.2.4:

4.2.2.4A Heated Water Service

The provisions of clause 5.2.8 of AS/NZS 3500.1 apply to heated water reticulation; or

Part B3 Non-drinking water services

Delete Introduction to this Part and insert Vic Introduction to this Part as follows:

Vic 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. It covers from the *point of connection* to the points of discharge.

Delete B3.3(1) and replace with Vic B3.3(1) as follows:

Vic B3.3 General Requirements

(1) 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 clauses 9.7.1(a) and (c) as follows:

(a) be of a type that has a removable handle;

(c) have a non-standard inlet connecting thread and a standard hose connection outlet.

Part B4 Fire-fighting water services

Vic B4.2 General requirements

Delete B4.2(2) and insert Vic B4.2(2) as follows:

(2) The installation of a fire-fighting water service must be in accordance with AS/NZS 3500.1.

After B4.2(2) insert Vic B4.2(3) as follows:

(3) When installed in class 1 or class 10 buildings and structures, an automatic fire sprinkler system must be in accordance with—

(a) AS 2118.1, AS 2118.4, AS 2118.5, FPAA101D or FPAA101H as appropriate.

Section C Sanitary plumbing and drainage systems

Part C1 Sanitary plumbing systems

Delete Introduction to this Part and insert Vic Introduction to this Part as follows:

Vic 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 including from sanitary fixtures and appliances to an *approved disposal system*.

Delete C1.3(1) and insert Vic C1.3(1) as follows:

Vic C1.3 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a sanitary *plumbing* system must be in accordance with the following:
 - (a) AS/NZS 3500.2, including the following variations and additions:
 - (i) 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.
 - (ii) After clause 15.1, insert 15.1(A) as follows:

15.1(A) 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; and
 - (iii) Substitute clause 15.3.3 as follows:

15.3.3 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

Delete Introduction to this Part and insert Vic Introduction to this Part as follows:

Vic 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 including from sanitary fixtures and appliances to an *approved disposal system*.

After CP2.1 insert Vic CP2.101 as follows:

Vic CP2.101 No point of connection

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.

Delete CV2.1 and insert Vic CV2.1 as follows:

Vic CV2.1 Flow rate, liquid-to-air ratio and pressure testing

- (1) Compliance with CP2.1(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 flow rate of 0.8 m/s; and
 - (c) A maximum flow rate of—
 - (i) 2 m/s under normal operating conditions; and
 - (ii) 3.5 m/s under surge conditions.

Delete CV2.2 and insert Vic CV2.2 as follows:

Vic CV2.2 * * * * *

This clause has deliberately been left blank.

Delete C2.4(1) and insert Vic C2.4(1) as follows:

Vic C2.4 General requirements

- (1) The design, construction, installation, replacement, repair, alteration additions and maintenance of a sanitary *drainage* system must be in accordance with the following:
 - (a) AS/NZS 3500.2, including the following variations and additions:
 - (i) Substitute clause 5.3(c) as follows:

5.3(c) under all bends greater than DN 65 forming risers from the drain.
 - (ii) After clause 15.1, insert 15.1(A) as follows:

15.1(A) Testing of a sanitary *drainage* installation—

 - (a) if installed at a property provided with *non-drinking water* by the *Network Utility Operator*, may be carried out in accordance with—
 - (i) a water test using non-drinking water provided by the *Network Utility Operator* in accordance with clause 15.2; or
 - (ii) an air test in accordance with clause 15.3; or
 - (iii) a vacuum test in accordance with clause 15.4; or
 - (b) in cases other than in (a), testing may be carried out by way of—
 - (i) an air test in accordance with clause 15.3; or
 - (ii) a vacuum test in accordance with clause 15.4.
 - (iii) After clause 5.4.2(d) of AS/NZS 3500.2, insert (d) as follows:

(d) 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.

After C2.4(1) insert Vic C2.4(2), (3), (4) and (5) as follows:

- (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

Performance Requirements

Delete DP1.1 and insert Vic DP1.1 as follows:

Vic DP1.1 Undue noise

- (1) Water services must provide water to fixtures and appliances 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 DP1.2 and insert Vic DP1.2 as follows:

Vic DP1.2 * * * * *

This clause has deliberately been left blank.

Deemed-to-Satisfy Provisions

Delete D1.1 and insert Vic D1.1 as follows:

Vic D1.1 Application

- (1) *Performance Requirement Vic DP1.1* is satisfied by complying with *D1.2* and *D1.3*.

Vic Section F Stormwater drainage systems

Vic Part F1 Roof drainage systems

Vic Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of any part of a roof *drainage* system.

Explanatory information:

Objective

Vic FO1

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 roof *drainage* installation; and
- (b) ensure that a roof *drainage* installation is adequate; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a roof *drainage* 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

Vic FF1.1

Buildings are to be provided with a roof *drainage* installation constructed to provide protection for people, property and the environment from the adverse effects of stormwater.

Performance Requirements

Vic FP1.1 Roof drainage systems

- (1) A roof *drainage* system must dispose of stormwater flows from rainfall events having an *average recurrence interval* appropriate to:
 - (a) The importance of the building
 - (b) The severity of potential damage to property, loss of amenity, illness or injury that would result from the failure of the system.

Vic FP1.2 Overflow

- (1) A roof *drainage* system must provide an overflow device to transfer stormwater flows generated by extreme rainfall events.

Vic FP1.3 Watertightness

- (1) All internal roof *drainage* components must be watertight.

Vic FP1.4 Design, construction and installation

- (1) A roof *drainage* system must ensure the following—
 - (a) Stormwater is transferred to a *point of connection*.
 - (b) Access for maintenance and clearing *blockages*.
- (2) A roof *drainage* installation must avoid the following—
 - (a) *Loss* of *amenity* due to *blockages* and *uncontrolled discharge*.

- (d) Foul air and gases accumulating in the roof *drainage* system
- (c) *Loss* to buildings and property *amenity* due to *blockages* and *uncontrolled discharge*.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy Provisions

Vic F1.1 Application

- (1) *Performance Requirements* Vic FP1.1 to Vic FP1.4 are satisfied by complying with Vic F1.2.

Vic F1.2 General requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of a roof *drainage* system must be in accordance with AS/NZS 3500.3.

Vic Part F2 Surface and subsurface drainage systems

Introduction

This Part sets out the requirements for the design, construction, installation, replacement repair, alteration and maintenance of any part of a surface *drainage* system to the *point of connection*.

Explanatory information:

Objective

Vic FO2

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 stormwater *drainage* installation;
- (b) ensure that a stormwater *drainage* installation is adequate; and
- (c) conserve water and energy; and
- (d) safeguard the environment; and
- (e) safeguard public and private infrastructure; and
- (f) ensure that a stormwater *drainage* 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

Vic FF2.1

Buildings and their surroundings are to be provided with a surface *drainage* and subsurface *drainage* installation and be constructed in such a manner as to provide protection for people, property and the environment from the adverse effects of stormwater.

Performance Requirements

Vic FP2.1 Surface drainage systems

- (1) A surface *drainage* system must dispose of stormwater flows from rainfall events having an *average recurrence interval* appropriate to:
- (a) The importance of the building
 - (b) The severity of potential damage to property, loss of amenity, illness or injury that would result from the failure of the system.

Vic FP2.2 Design, construction and installation

- (1) A surface *drainage* installation must avoid the following:
 - (a) *Blockage* and *uncontrolled discharge*.
 - (b) Damage from root penetration, superimposed loads or ground movement.
 - (c) Entry of sewage and/or liquid trade waste.
 - (d) Entry of stormwater into a sanitary *drainage*.
 - (e) Damage to the *Network Utility Operator's drainage* system
 - (f) Foul air and gases accumulating in the stormwater system.
 - (g) *Loss* to buildings or property.
- (2) A surface *drainage* installation must ensure the following:
 - (a) Access for maintenance and clearing blockages.
 - (b) Stormwater is transferred to a *point of connection*.

Verification Methods

There are no *Verification Methods* in this Part.

Deemed-to-Satisfy

Vic F2.1 Application

- (1) *Performance Requirements* Vic FP2.1 to Vic FP2.2 are satisfied by complying with Vic F2.2.

Vic F2.2 General Requirements

- (1) The design, construction, installation, replacement, repair, alteration and maintenance of surface and subsurface *drainage* systems must be in accordance with AS/NZS 3500.3.

Vic Section G

Heating, ventilation and air-conditioning systems

Vic Part G1 Heating ventilation and air-conditioning systems

Introduction

This Part sets out the requirements for the design, construction, installation, replacement, repair, alteration and maintenance of mechanical heating, cooling and ventilation systems.

Explanatory information:

OBJECTIVE

Vic GO1

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 heating, ventilation or air-conditioning installation; and
- (b) ensure that a heating, ventilation or air-conditioning 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 heating, ventilation or air-conditioning 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

Vic GF1.1

Mechanical services, plant and equipment used for heating, cooling and/or ventilation of a building must be adequate.

Vic GF2.2

A building's heating, cooling and/or ventilation system installation and maintenance must support energy efficient outcomes and minimise any adverse impact on building occupants or occupants of adjoining places, the *Network Utility Operator's* infrastructure, property and the environment.

Performance Requirements

Vic GP1.1 Design, construction, installation and maintenance

- (1) Mechanical services, or plant and equipment for heating, cooling and/or ventilation must avoid the following:
 - (a) Damage to property.
 - (b) *Loss* of *amenity* to occupants.
- (2) Mechanical services, or plant and equipment for heating, cooling and/or ventilation must ensure the following:
 - (a) Efficient use of energy and water.
 - (b) Access for maintenance.

Vic GP1.2 Pressure equipment

- (1) Pressure equipment used in mechanical heating, cooling or ventilation systems must avoid the likelihood of explosion, rupture or leakage.

Vic GP1.3 Microbial control

- (1) Mechanical air-handling and cooling water systems installed in a building must control the accumulation of harmful microbial growth.

Verification Methods

There are no verification methods in this Part.

Deemed-to-Satisfy Provisions

Vic G1.1 Application

- (1) *Performance Requirements* Vic GP1.1 to Vic GP1.3 are satisfied by complying with Vic G1.2.

Vic G1.2 General requirements

- (1) Mechanical ventilation and air-conditioning systems for buildings and structures must comply with the requirements of the relevant Parts of:
 - (a) NCC Volume One for Class 2 to 9 Buildings; or
 - (b) NCC Volume Two for Class 1 and 10 Buildings.
- (2) Mechanical ventilation and air-conditioning equipment must be in accordance with:
 - (a) AS/NZS 1200,
 - (b) AS 1324.1 for the application, performance and construction for air filters for use in general ventilation and air-conditioning,
 - (c) AS 1345 for the identification of the contents of pipes, conduits and ducts,
 - (d) AS/NZS 1668.1 for the use of mechanical ventilation and air-conditioning in buildings for fire and smoke control in multi-compartment buildings,
 - (e) AS 1668.2 for the use of mechanical ventilation and air-conditioning in buildings for mechanical ventilation,
 - (f) AS/NZS 3500.1 for the design, installation, alteration, addition, repair and commissioning of cold water services,
 - (g) AS/NZS 3500.2 for the design, installation, alteration, addition and repair of sanitary *plumbing* and *drainage*,
 - (h) AS/NZS 3500.4 for the design, installation, commissioning, alteration, addition and repair of *heated water* services,
 - (i) AS 4254.1 for flexible ductwork for air-handling systems in buildings,
 - (j) AS 4254.2 for the rigid ductwork for air-handling systems in buildings,
 - (k) AS 4426 for the selection, installation and finish of thermal insulation of pipework, ductwork and equipment.
 - (l) AS 4508 for the thermal resistance of insulation for ductwork used in building air-conditioning, and
 - (m) AS/NZS 5141 for residential heating and cooling systems.
 - (n) AS/NZS 5601 for gas installations.
 - (o) AS 1271, AS 1358 and AS 4041 for the design, construction, installation, replacement, repair, alteration and maintenance of pressure equipment and piping.
- (3) Copper piping for air-conditioning and refrigeration must meet the requirements of AS/NZS 1571.
- (4) Microbial control must be carried out in accordance with AS/NZS 3666.1 and AS/NZS 3666.2 as appropriate.
- (5) Condensate drains and bleed down drains installed in heating, cooling and air-conditioning equipment (including evaporative coolers) other than cooling towers must discharge to any of the following—
 - (a) an evaporative tray if specified by the manufacturer; or
 - (b) a sanitary *drainage* system by way of an untrapped tundish discharging to a charged floor waste gully in accordance with clause 4.6.7.8 or tundish and self-sealing device in accordance with clause 13.21 of AS/NZS 3500.2; or
 - (c) a surface water *drainage* system; or
 - (d) an absorption pit, but only if a sanitary or surface water *drainage* system is not available and the discharge water will not cause damage to buildings or facilities by changing soil moisture conditions.

- (e) a stormwater downpipe directly over the connection to the roof gutter; or
 - (f) Directly to the stormwater downpipe below the connection to the roof gutter provided a means of overflow or reverse flow protection is incorporated; or
 - (g) for evaporative coolers only, over a tiled roof, by way of a spreader.
- (5) Drains from a cooling tower must discharge to a sanitary *drainage* system in accordance with any applicable trade waste agreement.
- (6) Condensate drains and bleed down drains shall not discharge to a system that is used for the collection of water for potable use.
- (7) In this clause, bleed down drain means a drain that collects fluid from a valve used for bleeding and purging; evaporative tray means a tray used to gather excess moisture or condensation for the purpose of evaporation.

Preview

Vic Section H Low risk on-site liquid trade waste systems

Vic Part H1 Low risk on-site liquid trade waste systems

Vic 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 low risk on-site liquid trade waste system.

Explanatory information:

Objective

Vic HO1

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 low risk on-site liquid trade waste installation; and
- (b) ensure that an low risk on-site liquid trade waste 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 low risk on-site liquid trade waste 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

Vic HF1.1

Where liquid trade waste is generated, adequate space and facilities must be provided for the safe and hygienic collection, holding, treatment and/or disposal of the waste.

Vic HF1.2

Low risk on-site liquid trade waste systems must process liquid trade waste generated from an industry, business, trade or manufacturing process so that public health and environmental standards required by the authority having jurisdiction and/or particular requirements of the receiving *Network Utility Operator*, where applicable, are achieved.

Vic H1.1 Requirements for low risk on-site liquid trade waste management practices

- (1) A low risk liquid trade waste appliance must—
 - (a) be located as close as practicable to the fixtures that it serves and if of the portable type must be installed above ground; and
 - (b) be fitted with a cover which is able to withstand vehicular or pedestrian traffic or other loads likely to be imposed on it and is readily removable by one person; and
 - (c) be constructed of materials suitable for the nature of the wastes likely to be discharged through the appliance.
- (2) A low risk liquid trade waste appliance must—
 - (a) if fitted with an airtight cover, be provided with a DN 32, DN 50 or DN 80 sized vent as nominated by the relevant *Network Utility Operator*; and
 - (b) be provided with the following outlet ventilation—
 - (i) if installed outside a building, a DN 100 sized riser off a disconnector gully in accordance with clause 4.6.2 of AS/NZS 3500.2;
 - (ii) if not of the portable type and installed inside a building, a DN 50 sized vent off a disconnector gully in accordance with clause 4.6.5 of AS/NZS 3500.2; and
 - (iii) if of the portable type installed inside a building, a DN 50 sized vent off a DN 80 sized trap riser in accordance with clause 4.6.5 of AS/NZS 3500.2.
- (3) If a low risk liquid trade waste appliance and outlet vent are interconnected, the interconnection must be in

accordance with clause 6.9.3 of AS/NZS 3500.2.

- (4) The outlet from a low risk liquid trade waste appliance must—
- (a) if of the portable type receiving a hydraulic loading of up to 5 fixture units, be a minimum size of DN 50; or
 - (b) if of the portable type receiving a hydraulic loading of more than 5 fixture units, be a minimum size of DN 80; or
 - (c) in cases other than that in (i) or (ii), be a minimum size of DN 100; and
 - (d) have a separate trap, of the same size as the outlet pipe, installed at its outlet.
- (5) In this clause *hydraulic loading* means the rate of discharge imposed on a sanitary *plumbing* installation and is measured in fixture units; *low risk liquid trade waste* means water-borne discharges other than sewage that are classified by an Authority within the meaning of the *Water Act 1989* as being of low risk from causing harm to the environment and the assets of that Authority; *low risk liquid trade waste appliance* means an appliance that traps and partially treats low risk liquid trade waste and prevents it from entering the sewerage system.

Note:

The relevant Authority under the *Water Act 1989* or the holder of a licence under the *Water Industry Act 1994* may specify conditions of connection to a sewer for low risk trade waste to enter that sewer and may also require that the waste passes through a low risk liquid trade waste appliance of a type nominated by the Authority or holder of a licence before it enters the sewer.

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

Preview

Western Australia

Footnote: **Other legislation affecting buildings**

Preview

Western Australia

Footnote: Other legislation affecting buildings

1. Planning
2. Building
3. Health
4. Child Care
5. Gas Installations
6. Environment
7. Electrical Installations
8. Water Resource

Preview

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

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

Preview

Abbreviations and Symbols

Schedule 2 Abbreviations and symbols

Preview

Schedule 2 Abbreviations and Symbols

Schedule 2 Abbreviations and symbols

Preview

Schedule 2 Abbreviations and symbols

Abbreviations and symbols used in the NCC include:

Abbreviations

| Abbreviation | Definition |
|--------------|--|
| ABCB | Australian Building Codes Board |
| AC | Alternating Current |
| 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 |
| CRI | Colour Rendering Index |
| CS | Fire starts in a concealed space |
| C_{SHGC} | Constant for solar heat gain |
| CSIRO | Commonwealth Scientific and Industrial Research Organisation |
| C_U | 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 |
| R_w | Weighted sound reduction index |
| SF | Smouldering fire |
| SHGC | Solar Heat Gain Coefficient |
| SS | Structural stability and other property |
| STC | Sound Transmission Class |

Abbreviations and Symbols

| Abbreviation | Definition |
|--------------|---|
| 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 |

Symbols

| Symbol | Definition |
|--------------------------|--------------------------------------|
| ° | 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 |
| 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 |
| kW _{heating} | 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 |
| MJ/m ² .annum | Megajoules per square metre annum |
| mm | millimetre(s) |
| mm ² | square millimetre(s) |

Abbreviations and Symbols

| Symbol | Definition |
|------------------------------|--|
| MW | megawatt(s) |
| N | newton(s) |
| Pa | pascal(s) |
| Pa/m | pascal(s) per metre |
| s | second(s) |
| V | Volt(s) |
| W | Watt(s) |
| $W_{\text{input power}}$ | Watts of input power |
| $W_r/W_{\text{input power}}$ | 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 |

Defined Terms

Schedule 3 Definitions

Preview

Schedule 3 Defined Terms

Schedule 3 Definitions
Definitions

Preview

Schedule 3 Definitions

Definitions

Note: States and Territories may vary or add to the definitions contained in [Schedule 3](#) at the relevant State or Territory Appendix.

In the NCC unless the contrary intention appears—

Accessible means having features to enable use by people with a disability.

Accessway means a continuous [accessible](#) path of travel (as defined in AS 1428.1) to, into or within a building.

Accredited Testing Laboratory means—

- (a) an organisation accredited by the National Association of Testing Authorities (NATA) to undertake the relevant tests; or
- (b) an organisation outside Australia accredited to undertake the relevant tests by an authority recognised by NATA through a mutual recognition agreement; or
- (c) an organisation recognised as being an [Accredited Testing Laboratory](#) under legislation at the time the test was undertaken.

Activity support level means 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](#)'.

Activity traits, for the purposes of Volume One, means the features of the activities that will be undertaken in a [habitable room](#) or space.

Activity traits, for the purposes of Volume Two, means 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 means the body responsible for administering the [WaterMark Certification Scheme](#).

Aged care building means 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.

Air-conditioning, for the purposes of [Section J](#) of Volume One, means a [service](#) that actively cools or heats the air within a space, but does not include a [service](#) that directly

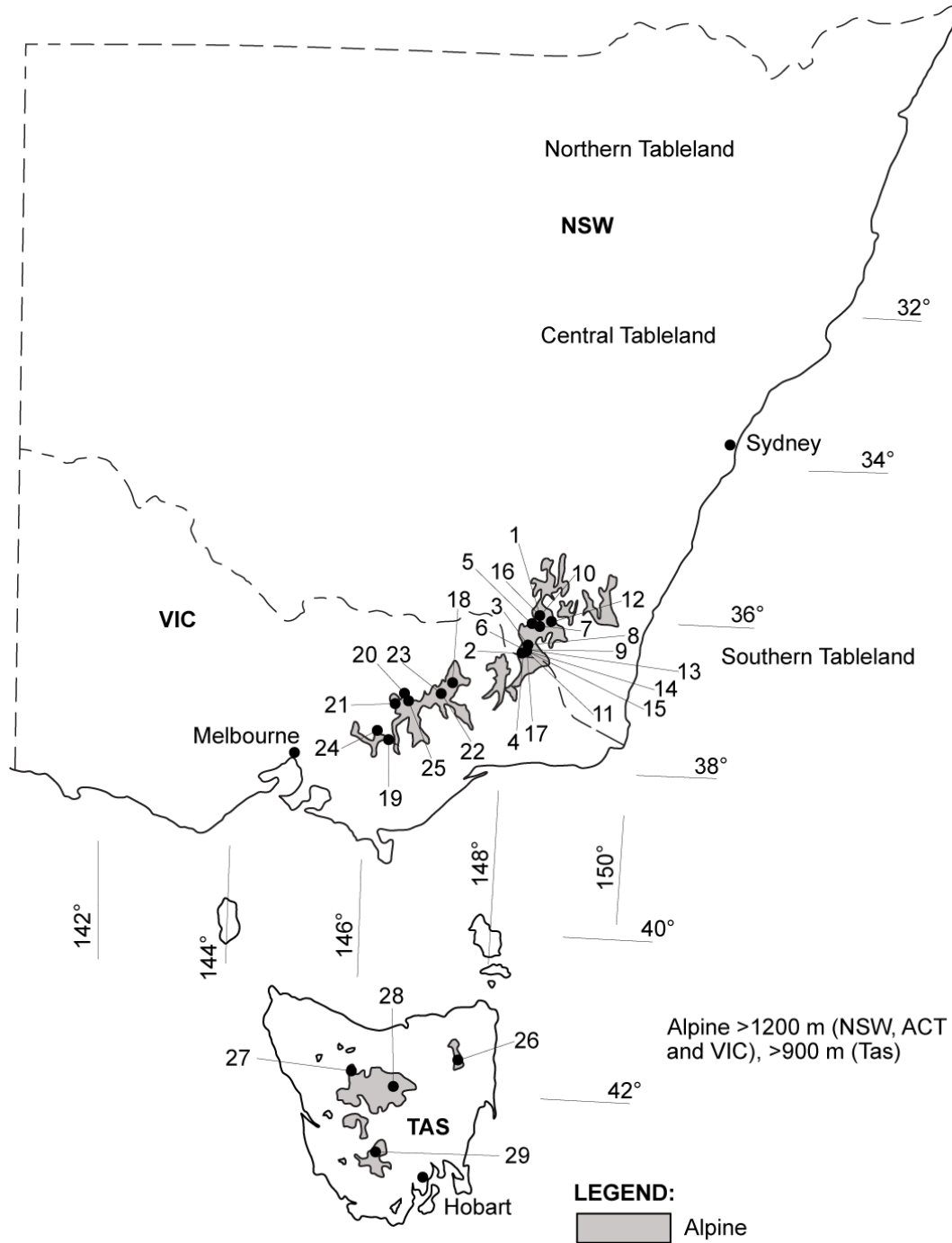
- (a) cools or heats cold or hot rooms; or
- (b) maintains specialised conditions for equipment or processes, where this is the main purpose of the [service](#).

Alarm zone, for the purposes of [Specification E2.2d](#) of Volume One, means an area of a building protected by one or more smoke alarms connected to one alarm circuit.

Alpine area means an area given in [Figure 1](#) and in [Table 1](#) for specific locations, and is—

- (a) likely to be subject to significant snowfalls; and
- (b) in New South Wales, A.C.T. or Victoria more than 1200 m above the Australian Height Datum; and
- (c) in Tasmania more than 900 m above the Australian Height Datum.

Figure 1 Alpine areas



Note:

This map is approximate only and altitude above Australian Height Datum must be used to determine whether the building falls into an *alpine area* region.

Table 1 Alpine areas where snow loads are significant

| Location | Map identifier |
|------------------------------|----------------|
| Kiandra (NSW) | 1 |
| Mount Kosciuszko (NSW) | 2 |
| Perisher Valley (NSW) | 3 |
| Thredbo (NSW) | 4 |
| Cabramurra (NSW) | 5 |
| Charlotte Pass Village (NSW) | 6 |
| Diggers Creek (NSW) | 7 |

Defined Terms

| Location | Map identifier |
|--|----------------|
| Guthega Village (NSW) | 8 |
| Mount Blue Cow (NSW) | 9 |
| Mount Selwyn (NSW) | 10 |
| Perisher Range (NSW) | 11 |
| Rules Point (NSW) | 12 |
| Sawpit Creek (NSW) | 13 |
| Smiggin Holes (NSW) | 14 |
| Smiggin Range (NSW) | 15 |
| Three Mile Dam (NSW) | 16 |
| Wilsons Valley (NSW) | 17 |
| Falls Creek (Vic.), including Summit Area, Sun Valley and Village Bowl | 18 |
| Mount Baw Baw (Vic.) | 19 |
| Mount Buffalo (Vic.), including Chalet, Dingo Dell and Tatra | 20 |
| Mount Buller (Vic.), including Baldy and Village | 21 |
| Mount Hotham (Vic.), including Davenport and Village Centre | 22 |
| Dinner Plain (Vic.) | 23 |
| Lake Mountain (Vic.) | 24 |
| Mount Stirling (Vic.) | 25 |
| Ben Lomond Ski Field (Tas.) | 26 |
| Cradle Valley (Tas.) | 27 |
| Great Lake Area (Tas.) | 28 |
| Mount Field Ski Field (Tas.) | 29 |

Explanatory information:

Alpine areas are located in New South Wales, Victoria and Tasmania.

Alpine areas are areas 1200 m or more above Australian Height Datum (AHD) for New South Wales, Australian Capital Territory and Victoria, and 900 m or more above AHD for Tasmania, as shown in [Figure 1](#).

Alpine areas are considered to receive significant snowfalls (snowfalls that result in an average snow accumulation on the ground of 175 mm or greater). Regions in New South Wales, the Australian Capital Territory and Victoria between 600–1200 m AHD are considered to be sub-**alpine areas** and may receive significant snowfalls, however unlike **alpine areas** the snow is unlikely to accumulate.

It is recommended that the **appropriate authority** be consulted to determine whether the building is located in an **alpine area**. AS/NZS 1170.3 also contains further detail in the identification of **alpine areas** and the altitude of the alpine regions of Australia.

In the Australian Capital Territory, Canberra is not designated as an **alpine area** as snow loads are not considered significant.

Alteration, in relation to a building, includes an addition or extension to a building.

Amenity means an attribute which contributes to the health, physical independence, comfort and well-being of people.

Ancillary element means an element that is secondary to and not an integral part of another element to which it is attached.

Annual greenhouse gas emissions means 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 means the relevant authority with the statutory responsibility to determine the particular matter.

State and Territory variations

For Volume One see [\(NSW, Appropriate authority\)](#)

For Volume Two see [\(NSW, Appropriate authority\)](#)

Appropriate Authority, for the purposes of [Schedule 7](#), means the relevant authority with the statutory responsibility to determine the particular matter satisfies the relevant [Performance Requirement](#).

Explanatory information:

Defined Terms

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.

Appropriately qualified person means a person recognised by the [appropriate authority](#) as having qualifications and/or experience in the relevant discipline in question.

Approved disposal system means a system for the disposal of sewage, sullage or stormwater approved by an authority having jurisdiction.

Articulated masonry means masonry construction in which special provisions have been made for movement by articulation.

Assembly building means 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.

State and Territory variation

For Volume One see [\(NSW, Assembly building\)](#) and [\(SA, Assembly building\)](#)

Assessment Method means a method that can be used for determining that a [Performance Solution](#) or [Deemed-to-Satisfy Solution](#) complies with the [Performance Requirements](#).

Atrium means 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 means 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 means designed to operate when activated by a heat, smoke or fire sensing device.

Available safe egress time (ASET) means the time between ignition of a fire and the onset of untenable conditions in a specific part of a building. This 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 means the ratio of the illumination level within a room provided by daylight to the level of daylight outside the building during overcast conditions.

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 means the [average specific extinction area](#) for smoke as determined by AS 5637.1.

Backflow prevention device means 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 means a reversal of water flow caused by the downstream pressure becoming greater than the supply pressure.

Backsiphonage means a reversal of flow of water caused by negative pressure in the distributing pipes of a water service or supply.

Backstage means 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 means one or more chemical cells connected in series, parallel or a combination of the two for the purpose of electrical energy storage.

Blockage means an obstruction within a [drainage](#) system.

Defined Terms

Boiler means 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.

Burnout means 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.

Breaking surf means 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.

Carpark means 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 means 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 [FV1.1](#) in Volume One and [V2.2.1](#) in Volume Two, means a wall that incorporates a drained cavity.

Certificate of Accreditation means 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 BCA.

Certificate of Conformity means 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.

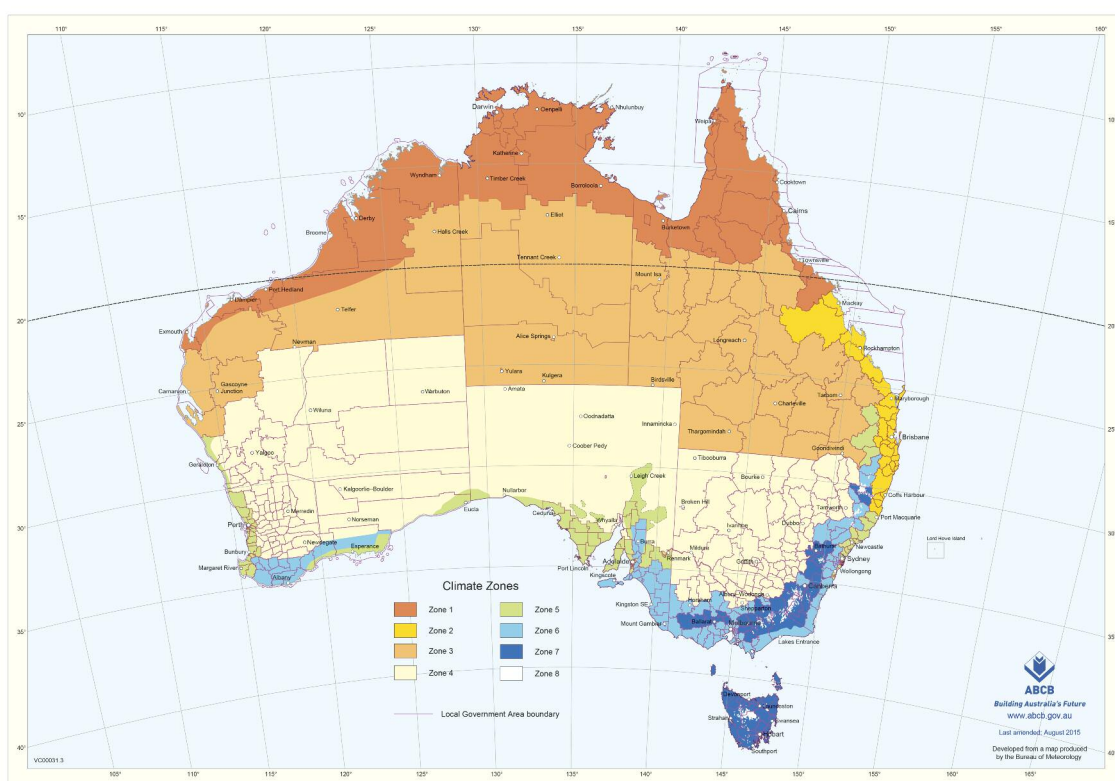
Certification body means a person or organisation operating in the field of material, product, form of construction or design certification that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ), and is accredited for a purpose other than as part of the CodeMark Australia Certification Scheme or *WaterMark Certification Scheme*.

Characteristic means 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 means 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 means an area defined in [Figure 2](#) and in [Table 2](#) for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

Figure 2 Climate zones for thermal design



Notes:

1. This map can be viewed in enlargeable form on the ABCB website at www.abcb.gov.au.
2. 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.
These areas have been defined in an enlarged format on the following maps produced by the Department of Planning, Transport and Infrastructure:
Adelaide Hills Council Climate Zone Map
Barossa Council Climate Zone Map
Regional Council of Goyder Climate Zone Map
 These maps can be viewed on the Government of South Australia website at www.sa.gov.au.
3. Locations in *climate zone* 8 are in *alpine areas*.

Table 2 Climate zones for thermal design—Various locations

| Location | <i>Climate zone</i> | Location | <i>Climate zone</i> | Location | <i>Climate zone</i> | Location | <i>Climate zone</i> |
|-------------------------------------|---------------------|---------------|---------------------|-------------------|---------------------|--------------|---------------------|
| Australian Capital Territory | | | | Canberra | 7 | | |
| New South Wales | | | | | | | |
| Albury | 4 | Byron Bay | 2 | Lord Howe Island | 2 | Sydney West | 6 |
| Armidale | 7 | Cobar | 4 | Moree | 4 | Tamworth | 4 |
| Batemans Bay | 6 | Coffs Harbour | 2 | Newcastle | 5 | Thredbo | 8 |
| Bathurst | 7 | Dubbo | 4 | Nowra | 6 | Wagga Wagga | 4 |
| Bega | 6 | Goulburn | 7 | Orange | 7 | Williamstown | 5 |
| Bellingen Shire | 7 | Grafton | 2 | Perisher Smiggins | 8 | Wollongong | 5 |
| Dorrigo Plateau | - | | | | | | |

Defined Terms

| Location | Climate zone | Location | Climate zone | Location | Climate zone | Location | Climate zone |
|-------------------------------------|--------------|-----------------|--------------|--------------------|--------------|----------------|--------------|
| Bellingen Shire - Valley & seaboard | 2 | Griffith | 4 | Port Macquarie | 5 | Yass | 6 |
| Bourke | 4 | Ivanhoe | 4 | Sydney East | 5 | | |
| Broken Hill | 4 | Lismore | 2 | | | | |
| Northern Territory | | | | | | | |
| Alice Springs | 3 | Elliot | 3 | Renner Springs | 3 | | |
| Darwin | 1 | Katherine | 1 | Tennant Creek | 3 | | |
| Queensland | | | | | | | |
| Birdsville | 3 | Gladstone | 2 | Mount Isa | 3 | | |
| Brisbane | 2 | Hervey Bay | 2 | Normanton | 1 | Townsville | 1 |
| Bundaberg | 2 | Hughenden | 3 | Rockhampton | 2 | Warwick | 5 |
| Cairns | 1 | Longreach | 3 | Roma | 3 | Weipa | 1 |
| Cooktown | 1 | Mackay | 2 | Southport | 2 | | |
| Cunnamulla | 3 | | | Toowoomba | 5 | | |
| South Australia | | | | | | | |
| Adelaide | 5 | Kingscote | 6 | Marree | 4 | Port Lincoln | 5 |
| Bordertown | 6 | Leigh Creek | 5 | Mount Gambier | 6 | Renmark | 5 |
| Ceduna | 5 | Lobethal | 6 | Murray Bridge | 6 | Tarcoola | 4 |
| Cook | 4 | Loxton | 5 | Oodnadatta | 4 | Victor Harbour | 6 |
| Elliston | 5 | Naracoorte | 6 | Port Augusta | 4 | Whyalla | 4 |
| Tasmania | | | | | | | |
| Burnie | 7 | Flinders Island | 7 | Launceston | 7 | Rossarden | 7 |
| Bicheno | 7 | Hobart | 7 | New Norfolk | 7 | Smithton | 7 |
| Deloraine | 7 | Huonville | 7 | Oatlands | 7 | St Marys | 7 |
| Devonport | 7 | King Island | 7 | Orford | 7 | Zeehan | 7 |
| Victoria | | | | | | | |
| Anglesea | 6 | Bright | 7 | Horsham | 6 | Swan Hill | 4 |
| Ararat | 7 | Colac | 6 | Melbourne | 6 | Traralgon | 6 |
| Bairnsdale | 6 | Dandenong | 6 | Mildura | 4 | Wangaratta | 7 |
| Ballarat | 7 | Echuca | 4 | Portland | 6 | Warrnambool | 6 |
| Benalla | 6 | Geelong | 6 | Sale | 6 | Wodonga | 6 |
| Bendigo | 6 | Hamilton | 7 | Shepparton | 4 | | |
| Western Australia | | | | | | | |
| Albany | 6 | Cocos Island | 1 | Kalgoorlie-Boulder | 4 | Port Hedland | 1 |
| Balladonia | 4 | Derby | 1 | Karratha | 1 | Wagin | 4 |
| Broome | 1 | Esperance | 5 | Meekatharra | 4 | Wyndham | 1 |
| Bunbury | 5 | Exmouth | 1 | Northam | 4 | | |
| Carnarvon | 3 | Geraldton | 5 | Pemberton | 6 | | |
| Christmas Island | 1 | Halls Creek | 3 | Perth | 5 | | |

Combustible means—

- (a) applied to a material — *combustible* as determined by AS 1530.1; and
- (b) applied to construction or part of a building — constructed wholly or in part of *combustible* materials.

Common wall, for the purposes of Volume One, means a wall that is common to adjoining buildings.

Common wall, for the purposes of Volume Two, means a wall that is common to adjoining buildings other than Class 1 buildings.

Condensation means the formation of moisture on the surface of a building element or material as a result of moist air

Defined Terms

coming into contact with a surface which is at a lower temperature.

Conditioned space, for the purposes of Volume One, means 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](#).

Conditioned space, for the purposes of Volume Two, means 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.

Containment protection means the installation of a [backflow prevention device](#) at the [point of connection](#) of a [Network Utility Operator's](#) water supply to a site.

Contaminant means 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.

Construction activity actions means 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.

Controlled fill means 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 means 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) means the critical heat flux at extinguishment (CHF in kW/m²) as determined by AS ISO 9239.1.

Cross-connection means any actual or potential connection between a water supply and any [contaminant](#).

Curtain wall means a non-[loadbearing external wall](#) that is not a [panel wall](#).

Damp-proof course (DPC) means 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.

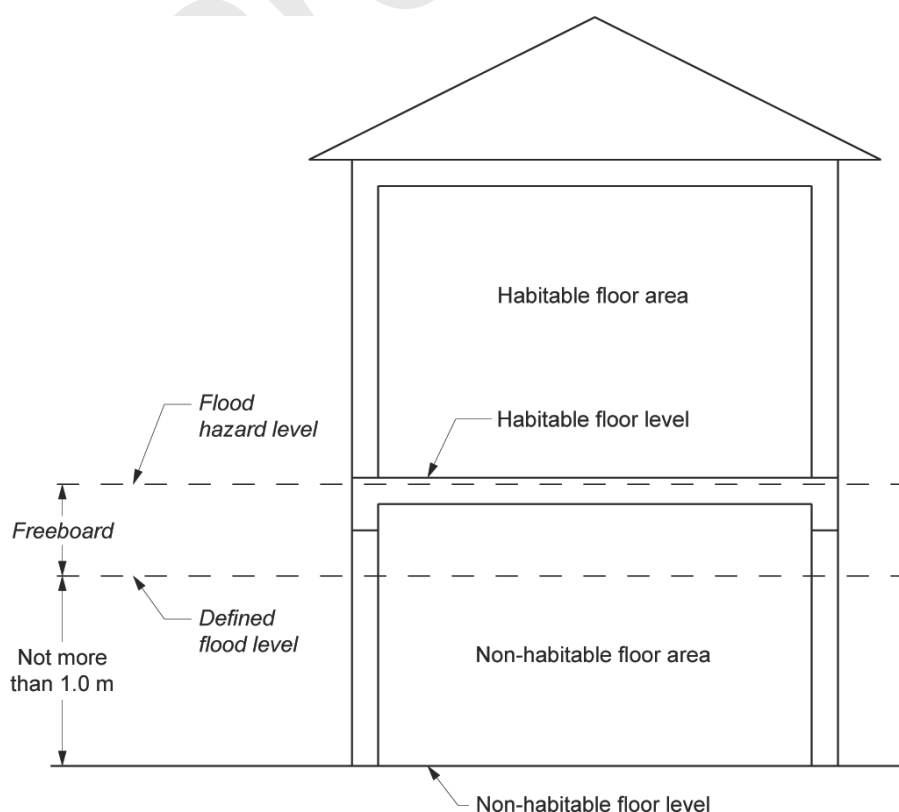
Deemed-to-Satisfy Provisions means provisions which are deemed to satisfy the [Performance Requirements](#).

Deemed-to-Satisfy Solution means a method of satisfying the [Deemed-to-Satisfy Provisions](#).

Defined flood event (DFE) means 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) means the flood level associated with a [defined flood event](#) relative to a specified datum (see [Figure 3](#)).

Figure 3 Identification of defined flood level, flood hazard level and freeboard



Design fire means the quantitative description of a representation of a fire within the [design scenario](#).

Defined Terms

Design scenario means the specific scenario of which the sequence of events is quantified and a [fire safety engineering](#) analysis is conducted against.

Design wind speed means 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 3](#) for wind classes).

Table 3 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 by Volume Two Part 3.0 , Structural provisions). | C2, C3, C4 (these wind classes are covered by Volume Two Part 3.0 , Structural provisions). |

Notes:

1. Wind classification map identifying wind regions is contained in Volume Two [Part 3.0](#) (see [Figure 3.0.1](#)).
2. Information on wind classes for particular areas may be available from the [appropriate authority](#).
3. “N” = non-cyclonic winds and “C” = cyclonic winds.

Designated bushfire prone area means land which has been designated under a power of legislation as being subject, or likely to be subject, to bushfires.

State and Territory variations

For Volume One see ([NSW, Designated bushfire prone area](#))

For Volume Two see ([NSW, Designated bushfire prone area](#))

Detention centre means 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 [FV1.1](#) in Volume One and [V2.2.1](#) in Volume Two, means a wall with cladding attached directly to the wall framing without the use of a drained cavity.

Discontinuous construction means the following:

- (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 means [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 means 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 means any sanitary [drainage](#), liquid trade waste [drainage](#) or stormwater [drainage](#) system.

Drinking water means 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.

Early childhood centre means 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.

State and Territory variations

For Volume One see ([Tas, Early childhood centre](#)) and ([Vic, Early childhood centre](#))

Defined Terms

Effective height means 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).

Electric passenger lift means 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.

Electricity network substation means 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.

Electrohydraulic passenger lift means a power-operated lift for raising or lowering people in a car in which the motion of the 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.

Envelope, for the purposes of [Section J](#) in Volume One, means the parts of a building's [fabric](#) that separate a [conditioned space](#) or [habitable room](#) from—

- (a) the exterior of the building; or
- (b) a non-[conditioned space](#) including—
 - (i) the floor of a rooftop plant room, lift-machine room or the like; and
 - (ii) the floor above a [carpark](#) or warehouse; and
 - (iii) the [common wall](#) with a [carpark](#), warehouse or the like.

Envelope, for the purposes of [Part 2.6](#) and [Part 3.12](#) in Volume Two, means the parts of a building's [fabric](#) that separate artificially heated or cooled spaces from—

- (a) the exterior of the building; or
- (b) other spaces that are not artificially heated or cooled.

Equivalent means equivalent to the level of health, safety and amenity provided by the [Deemed-to-Satisfy Provisions](#).

Evacuation route means 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 means the time calculated from when the emergency starts for the occupants of the building to evacuate to a [safe place](#).

Exit means—

- (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](#).

Expert Judgement means 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.

State and Territory variation:

For Volume Three see ([Tas, Expert Judgement](#))

External wall, for the purposes of Volume One, means an outer wall of a building which is not a [common wall](#).

External wall, for the purposes of Volume Two, means an outer wall of a building which is not a [separating wall](#).

Extra-low voltage means a [voltage](#) not exceeding 50 V AC or 120 V ripple-free DC.

Fabric means the basic building structural elements and components of a building including the roof, ceilings, walls, glazing and floors.

Farming means—

- (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.

State and Territory variation

For Volume One see (SA, Farming)

Farm building means 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
 - (iii) a combination of (i) and (ii); and
- (A) 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
- (B) with a total *floor area* of not more than 3500 m².

State and Territory variation

For Volume One see (SA, Farm building)

Farm shed means 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
- (A) occupied neither frequently nor for extended periods by people; and
- (B) in which the total number of persons accommodated at any time does not exceed 2; and
- (C) with a total *floor area* of more than 500 m² but not more than 2000 m².

State and Territory variation

For Volume One see (SA, Farm shed)

Farm vehicle means a vehicle used in connection with *farming*.

State and Territory variation

For Volume One see (SA, Farm vehicle)

Finished ground level, for the purposes of Part 3.2 in Volume Two, means the ground level adjacent to footing systems at the completion of construction and landscaping.

Fire brigade means 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 E1.3(a)(ii) and H3.9 in Volume One, means a state or territory government operated premises which is a station for a *fire brigade*.

Fire compartment means—

- (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.

Fire growth means the stage of fire development during which the *heat release rate* and the temperature of the fire are generally increasing.

Fire hazard means 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 means 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 3*.
- (b) *Smoke-Developed Index*, *smoke development rate* and *Spread-of-Flame Index*, determined in accordance with *Schedule 6*.
- (c) *Group number* and *smoke growth rate index* (SMOGR_{RC}), determined in accordance with *Specification C1.10* of Volume One.

Fire intensity means the rate of release of calorific energy in watts, determined either theoretically or empirically, as applicable.

Fire-isolated passageway means 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 means a ramp within a *fire-resisting* enclosure which provides egress from a *storey*.

Fire-isolated stairway means a stairway within a *fire-resisting shaft* and includes the floor and roof or top enclosing structure.

Fire load means 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. The calorific values must be determined at the ambient moisture content or humidity. (The unit of measurement is MJ.)

Fire-protected timber means *fire-resisting* timber building elements that comply with Volume One *Specification C1.13a*.

Fire-protective covering means—

- (a) 13 mm fire-protective grade plasterboard; or
- (b) 12 mm cellulose cement flat sheeting complying with AS/NZS 2908.2 or ISO 8336; or
- (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; or
- (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) means the grading periods in minutes determined in accordance with *Schedule 5*, for the following criteria—

- (a) *structural adequacy*; and
- (b) *integrity*; and
- (c) *insulation*,

and expressed in that order.

Note:

A dash means that 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, for the purposes of Volume One, applied to a building element, means having an FRL appropriate for that element.

Fire-resisting, for the purposes of Volume Two, applied to a *structural member* or other part of a building, means having the FRL *required* for that *structural member* or other part.

Fire-resisting construction, for the purposes of Volume One, means one of the Types of construction referred to in *Part C1* of Volume One.

Fire safety engineering means application of engineering principles, rules and *expert judgement* based on a scientific appreciation of the fire phenomenon, often using specific *design scenarios*, 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

Defined Terms

- (b) quantify the hazards and risk of fire and its effects; and
- (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 means 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 means—

- (a) the far boundary of a road, river, lake or the like adjoining the allotment; or
- (b) a side or rear boundary of the allotment; or
- (c) an [external wall](#) of another building on the allotment which is not a Class 10 building.

Fire wall means 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 E2.2d](#) in Volume One, means a system of electrical wiring (either AC or DC), in which cables are fixed or supported in position.

Flammability Index means the index number as determined by AS 1530.2.

Flashing means 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.

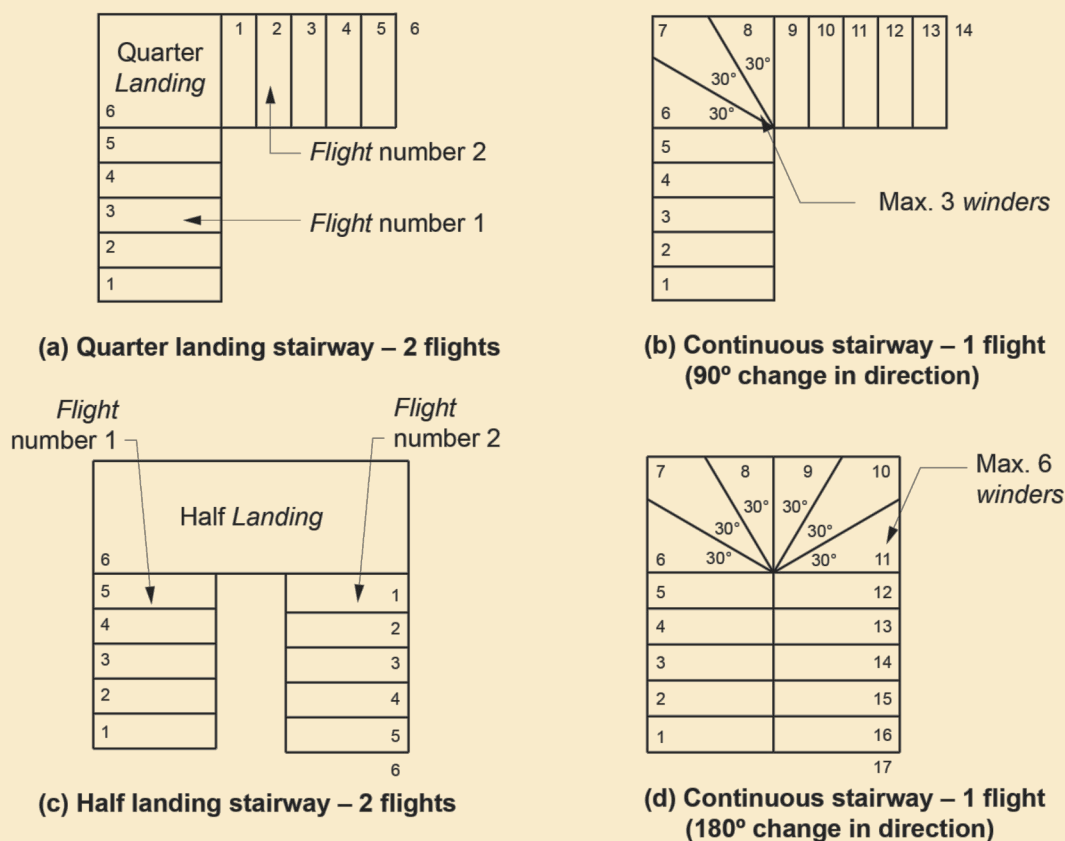
Flashover, in relation to [fire hazard properties](#), means a [heat release rate](#) of 1 MW.

Flight, means that part of a stair that has a continuous series of [risers](#), including [risers](#) of [winders](#), not interrupted by a [landing](#) or floor (for Volume Two, see [Figure 4](#)).

Explanatory information for Volume Two:

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 [Figure 4](#), are considered sufficient to halt a person's fall and therefore are considered for the purposes of Volume Two not to be part of the [flight](#).

Figure 4 Identification of stair flights — Plan view



Flood hazard area means the [site](#) (whether or not mapped) encompassing land lower than the [flood hazard level](#) which has been determined by the [appropriate authority](#).

State and Territory variations

For Volume One see ([Vic, Flood hazard area](#))

For Volume Two see ([Vic, Flood hazard area](#))

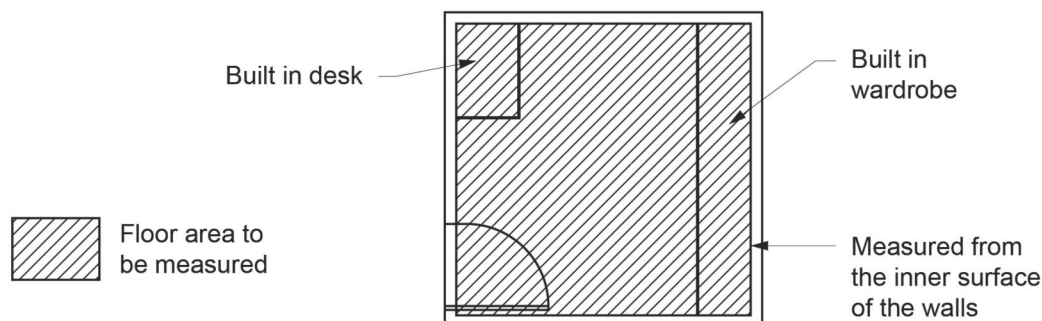
Flood hazard level (FHL) means the flood level used to determine the height of floors in a building and represents the [defined flood level](#) plus the [freeboard](#) (see [Figure 3](#)).

Floor area, for the purposes of Volume One, means—

- (a) in relation to a building — the total area of all [storeys](#); and
- (b) in relation to a [storey](#) — the area of all floors of that [storey](#) measured over the enclosing walls, and includes—
 - (i) the area of a [mezzanine](#) within the [storey](#), measured within the finished surfaces of any [external walls](#); and
 - (ii) the area occupied by any [internal wall](#) or partitions, any cupboard, or other built-in furniture, fixture or fitting; and
 - (iii) if there is no enclosing wall, an area which has a use that—
 - (A) contributes to the [fire load](#); or
 - (B) impacts on the safety, health or amenity of the occupants in relation to the provisions of the BCA; and
- (c) 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; and
- (d) in relation to a [fire compartment](#) — the total area of all floors within the [fire compartment](#) measured within the finished 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
- (e) 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](#).

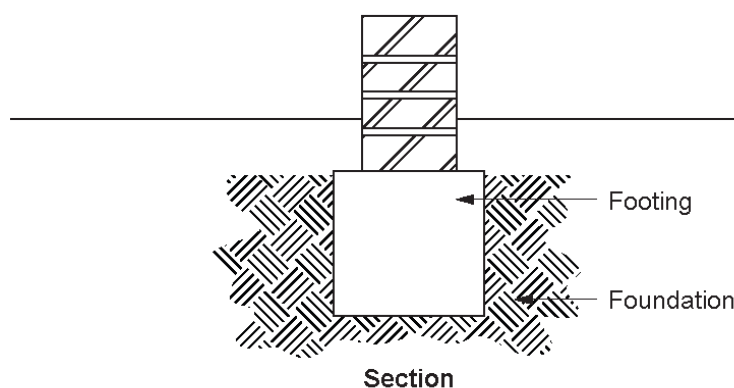
Floor area, for the purposes of Volume Two, means in relation to a room, the area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting (see [Figure 5](#)).

Figure 5 Identification of floor area of a room



Foundation means the ground which supports the building (see [Figure 6](#)).

Figure 6 Identification of foundation



Fractional effective dose (FED) means 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 [Schedule 7](#). 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.

Freeboard means 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.

State and Territory variations

For Volume One see ([Vic](#), [Freeboard](#))

For Volume Two see ([Vic](#), [Freeboard](#))

Fully developed fire means the state of total involvement of the majority of available combustible materials in a fire.

Glazing, for the purposes of [Section J](#) in Volume One, means a transparent or translucent element and its supporting frame located in the [envelope](#), and includes a [window](#) other than a [roof light](#).

Glazing, for the purposes of [Part 2.6](#) and [Part 3.12](#) in Volume Two, means 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](#).

Green Star means the building sustainability rating scheme managed by the Green Building Council of Australia.

Going means the horizontal dimension from the front to the back of a tread less any overhang from the next tread or [landing](#) above (see [Figure 3.9.1.4](#)).

Group number means the number of one of 4 groups of materials used in the regulation of [fire hazard properties](#) and

Defined Terms

applied to materials used as a finish, surface, lining, or attachment to a wall or ceiling.

Habitable room means 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 means a rating of either *Low Hazard*, *Medium Hazard* or *High Hazard* determined in accordance with *Specification B5.1* in Volume Three, for any *Deemed-to-Satisfy Solution*.

Health-care building means 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 means water that has been intentionally heated. It is normally referred to as hot water or warm water.

Heating load means 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 means the thermal energy produced by combustion (kJ).

Heat release rate (HRR) means the rate of thermal energy production generated by combustion (kW (preferred) or MW).

High Hazard means any condition, device or practice which, in connection with a water supply, has the potential to cause death.

High wind area means a region that is subject to *design wind speed* more than N3 or C1 (see *Table 3*).

Horizontal exit means a *required* doorway between 2 parts of a building separated from each other by a *fire wall*.

Hours of operation means the number of hours when the occupancy of the building is greater than 20% of the peak occupancy.

House energy rating software, for the purposes of Volume One, means software accredited under the Nationwide House Energy Rating Scheme.

House energy rating software, for the purposes of Volume Two—

- (a) applied to *V2.6.2.2*—means software accredited or previously accredited under the Nationwide House Energy Rating Scheme and the additional functionality provided in non-regulatory mode; and
- (b) applied to *3.12.0.1*—means 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 means the requirements for Class 1 and 10 buildings contained in Volume Two of the National Construction Code as published by the Australian Building Codes Board.

Illuminance means the luminous flux falling onto a unit area of surface.

Illumination power density (W/m²) means 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.

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.

Inclined lift means 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 means the installation of a [backflow prevention device](#) at the point where a water service connects to a single fixture or appliance.

Insulation, in relation to an FRL, means 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, means the ability to resist the passage of flames and hot gases specified in AS 1530.4.

Internal wall, for the purposes of Volume One, excludes a [common wall](#) or a party wall.

Internal wall, for the purposes of Volume Two, excludes a [separating wall](#), [common wall](#) or party wall.

Interstitial condensation means the [condensation](#) of moisture on surfaces between material layers inside the building component.

JAS-ANZ means the Joint Accreditation System of Australia and New Zealand.

Lamp power density (W/m²) means 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.

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 means an area at the top or bottom of a [flight](#) or between two [flights](#).

Latent heat gain means the heat gained by the vapourising of liquid without change of temperature.

Lightweight construction means 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 means intended to resist vertical forces additional to those due to its own weight.

Loadbearing wall, for the purposes of [Part 3.2](#) in Volume Two, means any wall imposing on the footing a load greater than 10 kN/m.

Loss means either: physical damage, financial loss or loss of [amenity](#).

Low Hazard means 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 rainfall intensity area means an area with a 5 minute rainfall intensity for an [average recurrence interval](#) of 20 years of not more than 125 mm/hour.

Explanatory information:

Rainfall intensity figures can be obtained from [Tables 3.5.3.1a to 3.5.3.1h](#) in Volume Two.

Low-rise, low-speed constant pressure lift means 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 means 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 means a [voltage](#) exceeding [extra-low voltage](#), but not exceeding 1000 V AC or 1500 V DC.

Luminance contrast means the light reflected from one surface or component, compared to the light reflected from another surface or component.

Massive timber means an element not less than 75 mm thick as measured in each direction formed from solid and laminated timber.

Medium Hazard means any condition, device or practice which, in connection with a water supply, has the potential to injure or endanger health.

Minimum Energy Performance Standards (MEPS) means the Minimum Energy Performance Standards for equipment and appliances established through the Greenhouse and Energy Minimum Standards Act 2012.

Defined Terms

Mixed construction means a building consisting of more than one form of construction, particularly in double-storey buildings.

Mezzanine means an intermediate floor within a room.

Mould means a fungal growth that can be produced from conditions such as dampness, darkness, or poor ventilation.

NABERS Energy for Offices means the National Australia Built Environment Rating Systems for office energy efficiency, which is managed by the New South Wales Government.

Network Utility Operator means 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.

State and Territory variation

For Volume Three see (*Tas, Network Utility Operator*)

Non-combustible means—

- (a) applied to a material — not deemed *combustible* as determined by AS 1530.1 — Combustibility Tests for Materials; and
- (b) applied to construction or part of a building — constructed wholly of materials that are not deemed *combustible*.

Non-drinking water means water which is not *drinking water*.

Occupant traits, for the purposes of Volume One, means the features, needs and profile of the occupants in a *habitable room* or space.

Occupant traits, for the purposes of Volume Two, means the features, needs and profile of the occupants in a room or space.

Explanatory information:

This term is used to describe the characteristics of the occupants and their associated requirements in relation to a room or space.

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 means 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*.

On-site wastewater management system means a system installed on premises that receives and/or treats wastewater generated on the premises and applies the resulting effluent to an *approved disposal system* or re-use system.

State and Territory variation

For Volume Three see (*Tas, On-site wastewater management system*)

Open-deck carpark means 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 means 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 means a tiered stand substantially open at the front.

Defined Terms

Other property means 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 means air outside the building.

Outdoor air economy cycle is 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 means 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 means a device that provides relief to a water service, sanitary *plumbing* and *drainage* system, *rainwater harvesting system* or stormwater system to avoid the likelihood of *uncontrolled discharge*.

Panel wall means a non-*loadbearing external wall*, in frame or similar construction, that is wholly supported at each *storey*.

Patient care area means 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), for the purposes of *Schedule 7*, means the process and the associated report that defines the scope of work for the performance-based *fire safety engineering* analysis and the technical basis for analysis as agreed by stakeholders.

Performance Requirement means a requirement which states the level of performance which a *Performance Solution* or *Deemed-to-Satisfy Solution* must meet.

Performance Solution means a method of complying with the *Performance Requirements* other than by a *Deemed-to-Satisfy Solution*.

Perimeter of building, for the purposes of *Part 3.6* in Volume Two, means the external envelope of a building.

Personal care services means any of the following:

- (a) The provision of nursing care.
- (b) Assistance or supervision in—
 - (i) bathing, showering or personal hygiene; or
 - (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 3.12* in Volume Two, means an assembly of pipes, with or without valves or other fittings, connected together for the conveyance of liquids and gases.

Pliable building membrane means a water barrier as classified by AS/NZS 4200.1.

Plumbing means any water *plumbing*, roof *plumbing*, sanitary *plumbing* system or heating, ventilation and air-conditioning *plumbing*.

Plumbing or Drainage Solution means a solution which complies with the *Performance Requirements* and is a—

- (a) *Performance Solution*; or
- (b) *Deemed-to-Satisfy Solution*; or
- (c) combination of (a) and (b).

Point of connection —

- (a) for a *heated water* service means the point where the water heater connects to the cold water service downstream of the isolation valve; and
- (b) for sewage disposal means the point where the on-site *drainage* system connects to the *Network Utility Operator's* sewerage system or to an *on-site wastewater management system*; and
- (c) for stormwater disposal means the point where the on-site *drainage* system connects to the *Network Utility Operator's* stormwater system or to an *approved disposal system*; and
- (d) for a water service means the point where the service pipe within the premises connects to the *Network Utility Operator's* property service or to an alternative water supply system.

Predicted Mean Vote (PMV) means the Predicted Mean Vote of the thermal perception of building occupants determined in accordance with ANSI/ASHRAE Standard 55.

Pressure vessel means a vessel subject to internal or external pressure. It includes 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.

Primary building element, for the purposes of Volume One, means a member of a building designed specifically to take part of the loads specified in [B1.2](#) 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.

Primary building element, for the purposes of [Part 3.1.4](#) in Volume Two, means a member of a building designed specifically 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.

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.

State and Territory variation

For Volume Two see ([Qld, Primary building element](#))

Private bushfire shelter means 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.

Private garage, for the purposes of Volume One, means—

- (a) any garage associated with a Class 1 building; or
- (b) 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
- (c) any separate single *storey* garage associated with another building where such garage contains not more than 3 vehicle spaces.

Private garage, for the purposes of Volume Two, means—

- (a) any garage associated with a Class 1 building; or
- (b) any separate single *storey* garage associated with another building where such garage contains not more than 3 vehicle spaces.

Product means *plumbing* and *drainage* items within the scope of the PCA including but not limited to:

- (a) Materials, fixtures and components used in a *plumbing* or *drainage* installation.
- (b) Appliances and equipment connected to a *plumbing* or *drainage* system.

Product Technical Statement means 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 [\(b\)](#).

Professional engineer means 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—

Defined Terms

- (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.

State and Territory variation

For Volume Three see (*Tas, Professional engineer*)

Public corridor means 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*.

R-Value (m².K/W) means the thermal resistance of a component calculated by dividing its thickness by its thermal conductivity.

Rapid roller door means a door that opens and closes at a speed of not less than 0.5 m/s.

Rainwater harvesting system means a *plumbing* installation that comprises—

- (a) any *plumbing* that connects a rainwater tank to any *drinking water* or *non-drinking water* outlets; and
- (b) any top-up line that conveys *drinking water* from a *Network Utility Operator's* water supply to a rainwater tank.

Recognised expert means 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 *A5.3(5)*. Generally, this means a hydraulic consultant or engineer, however the specific requirements are determined by the authority having jurisdiction.

Under *A5.3(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 Provision*.

State and Territory variation

For Volume Three see (*Tas, Recognised expert*)

Reference building, for the purposes of Volume One, means 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.

Reference building, 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 means 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-Values* achieved by adding *reflective insulation* are given in the explanatory information accompanying *Figures 3.12.1.1, 3.12.1.3 and 3.12.1.4*. 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 means the energy consumed by a building's *services* minus the amount of *renewable energy* generated and used on *site*.

Reinforced masonry means masonry reinforced with steel reinforcement that is placed in a bed joint or grouted into a core to strengthen the masonry.

Renewable energy means 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.

Required means *required* to satisfy a *Performance Requirement* or a *Deemed-to-Satisfy Provision* of the NCC as

appropriate.

Required safe egress time (RSET) means the time required for safe evacuation of occupants to a place of safety prior to the onset of untenable conditions.

Residential aged care building means 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.

Residential care building means 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 means 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 means the greatest number of *storeys* calculated in accordance with [C1.2 of Volume One](#).

Riser means the height between consecutive treads and between each *landing* and continuous tread.

Roof light, for the purposes of [Section J](#) and [Part F4](#) in Volume One, and [Parts 2.6, 3.8.4 and 3.12](#) in Volume Two, means 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.

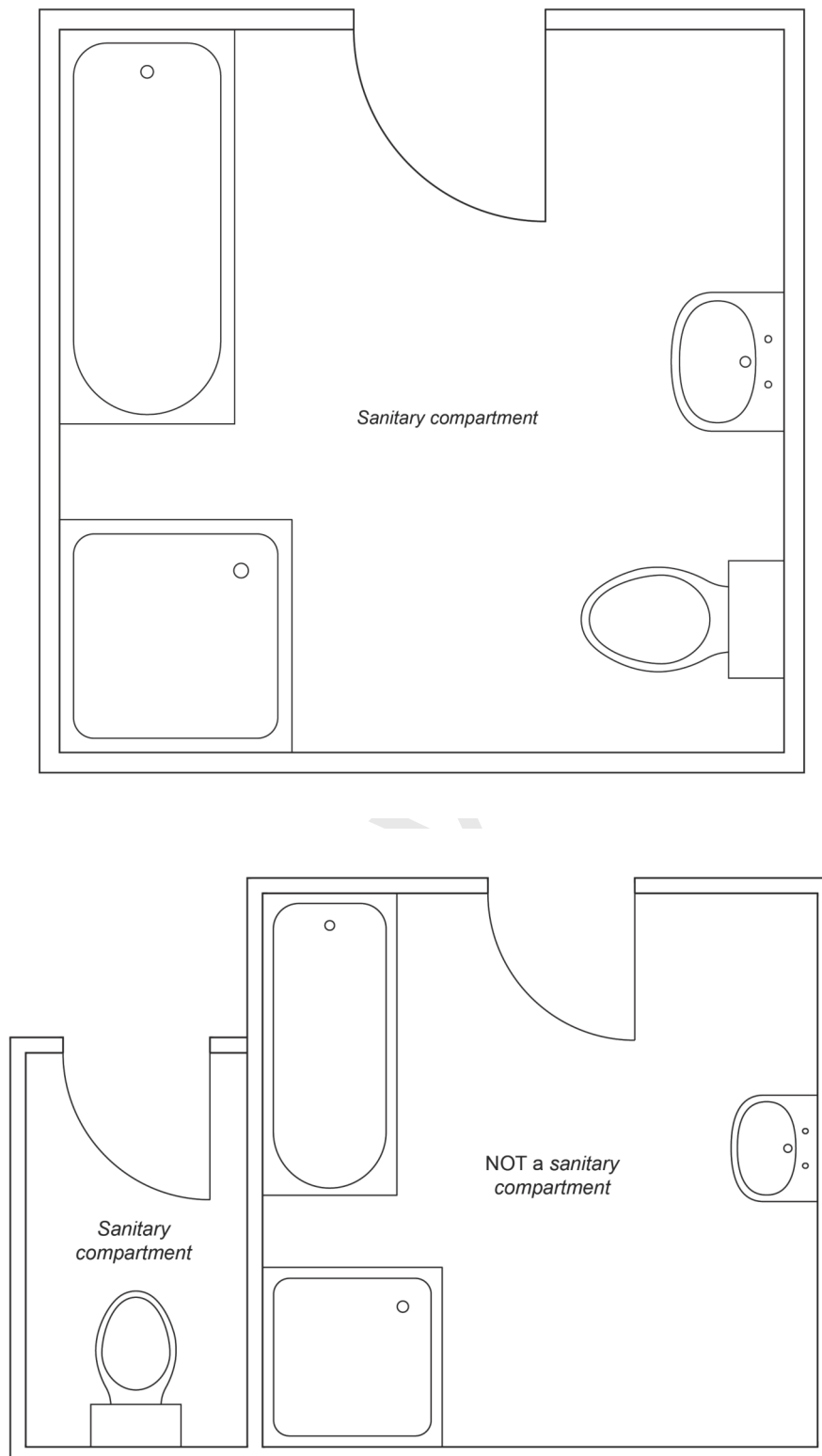
Rolled fill means material placed in layers and compacted by repeated rolling by an excavator.

Safe place means—

- (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 means a room or space containing a closet pan or urinal (see [Figure 7](#)).

Figure 7 Identification of a sanitary compartment



Sarking-type material means 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.

Self-closing, 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.

Self-closing, 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.

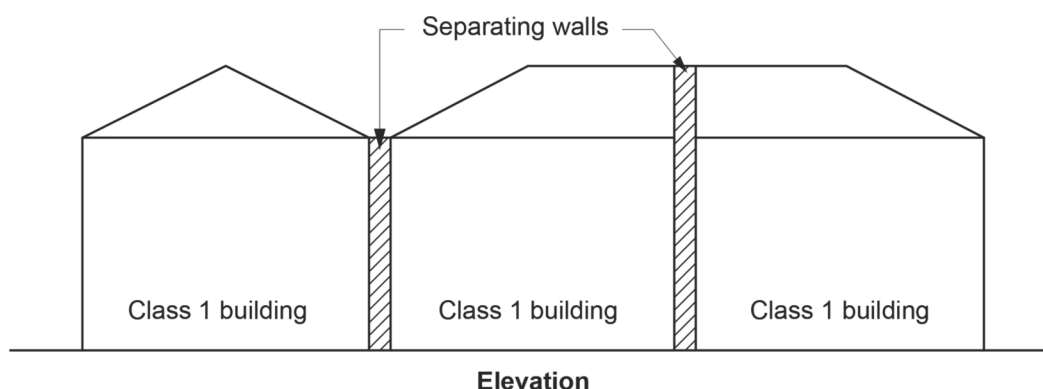
Defined Terms

Sensible heat gain means the heat gained which causes a change in temperature

Separating element means 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 means a wall that is common to adjoining Class 1 buildings (see [Figure 8](#)).

Figure 8 Separating wall



Note:

In Volume Two may also be known as a party wall and typically is *required* to be *fire-resisting* construction (see [Parts 3.7.2](#) and [3.7.3](#)).

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 means a garage which is not a *private garage* and is for the servicing of vehicles, other than only washing, cleaning or polishing.

Shaft means 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 means the area affected by water from a shower, including a shower over a bath.

Single leaf masonry means outer walls constructed with a single thickness of masonry unit.

Site means the part of the allotment of land on which a building stands or is to be erected.

Sitework means 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 means a certificate issued under the Commonwealth Government's Small-scale Renewable Energy Scheme.

Small-sized, low-speed automatic lift means 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.

Smoke-and-heat vent means 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 means the index number for smoke as determined by AS/NZS 1530.3.

Smoke development rate means the development rate for smoke as determined by testing flooring materials in accordance with AS ISO 9239.1.

Smoke growth rate index (SMOGR_{RC}) means 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.

Defined Terms

Solar admittance means the fraction of incident irradiance on a [wall-glazing construction](#) that adds heat to a building's space.

Sole-occupancy unit means 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](#) of Volume One, means the opaque part of a façade in curtain wall construction which is commonly adjacent to, and integrated with, [glazing](#).

Spiral stairway means a stairway with a circular plan, winding around a central post with steps that radiate from a common centre or several radii (see [Figures 3.9.1.2\(a\)](#) and [\(b\)](#)).

Spread-of-Flame Index means the index number for spread of flame as determined by AS/NZS 1530.3.

Sprinkler alarm switch, for the purposes of [Specification E2.2d](#) of Volume One, means 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 means a floor or platform in a Class 9b building on which performances are presented before an audience.

Stairway platform lift means 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 means the Fire-resistance Tests of Elements of Building Construction as described in AS 1530.4.

Storey means 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 means a component or part of an assembly which provides vertical or lateral support to a building or structure.

Surface water means 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 means 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 means a stair tread with a walking area that grows smaller towards one end.

Thermal comfort level means the level of thermal comfort in a building expressed as a [PMV](#) sensation scale.

Total R-Value (m².K/W), for the purposes of Volume One, means 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.

Total R-Value (m².K/W), for the purposes of Volume Two, means the sum of the [R-Values](#) of the individual component layers in a composite element including any building material, insulating material, airspace and associated surface resistances.

Total System Solar Heat Gain Coefficient (SHGC), for the purposes of Volume One, means the fraction of incident irradiance on a [wall-glazing construction](#) or a [roof light](#) that adds heat to a building's space.

Total System Solar Heat Gain Coefficient (SHGC), for the purposes of Volume Two, means the fraction of incident irradiance on [glazing](#) or a [roof light](#) that adds heat to a building's space.

Total System U-Value (W/m².K), for the purposes of Volume One, means the thermal transmittance of the composite element allowing for the effect of any airspaces, thermal bridging and associated surface resistances.

Total System U-Value (W/m².K), 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.

Defined Terms

- Treatment area** means 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** means any unintentional release of fluid from a [plumbing](#) and [drainage](#) system and includes leakage and seepage.
- Unique wall**, for the purposes of [FV1.1](#) in Volume One and [V2.2.1](#) in Volume Two, means a wall which is neither a [cavity wall](#) nor a [direct fix cladding wall](#).
- Unobstructed opening**, for the purposes of [Part 3.6](#) in Volume Two, means a glazed area that a person could mistake for an open doorway or clearway and walk into the glazed panel.
- Unreinforced masonry** means masonry that is not reinforced.
- Vapour pressure** means the pressure at which water vapour is in thermodynamic equilibrium with its condensed state.
- Ventilation opening** means 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** means 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 3.8.1](#) in Volume Two, means 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** means the maximum distance at which an object of defined size, brightness and contrast can be seen and recognised.
- Voltage** means a difference of potential, measured in Volts (V) and includes [extra-low voltage](#) and [low voltage](#).
- Waffle raft** means 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, means 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** means 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** means a [pliable building membrane](#) or the exterior cladding when no [pliable building membrane](#) is present.
- WaterMark Conformity Assessment Body (WMCAB)** means 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 Certification Scheme** means the ABCB scheme for certifying and authorising [plumbing](#) and [drainage products](#).
- WaterMark Licence** means a licence issued by a [WaterMark Conformity Assessment Body](#).
- WaterMark Schedule of Excluded Products** means the list maintained by the [administering body](#) of [products](#) excluded from the [WaterMark Certification Scheme](#).
- WaterMark Schedule of Products** means 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** means the property of a material that does not allow moisture to penetrate through it.
- Water resistant** means the property of a system or material that restricts moisture movement and will not degrade under conditions of moisture.
- Water sensitive materials** means materials that have an inherent capacity to absorb water vapour and include timber, plasterboard, plywood, oriented strand board and the like.
- Watertight** means will not allow water to pass from the inside to the outside of the component or joint and vice versa.
- Wet area** means 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.
- Winders** means treads within a straight [flight](#) that are used to change direction of the stair (see [Figure 4](#)).

Defined Terms

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.

Yield means 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 means 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 4 Referenced documents

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The Standards and other documents listed in [Schedule 4](#) are referred to in the NCC.

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| No. | Date | Title | Volume One | Volume Two | Volume Three |
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| AS/NZS ISO 717 Part 1 | 2004 | Acoustics — Rating of sound insulation in buildings and of building elements — Airborne sound insulation See Note 1 | FV5.1 , FV5.2 , FV5.3 , FV5.4 , F5.2 | V2.4.6 , 3.8.6.3 N | N/A |
| AS ISO 717 Part 2 | 2004 | Acoustics — Rating of sound insulation in buildings and of building elements — Impact sound insulation | FV5.1 , FV5.3 , F5.3 | 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 | B2.2 |
| AS/NZS 1170 Part 0 | 2002 | Structural design actions — General principles (incorporating amendments 1, 3 and 4) | BV1 , B1.1 , Spec B1.2 | V2.1.1 , 3.0.2 , 3.5.1.0 | N/A |
| AS/NZS 1170 Part 1 | 2002 | Structural design actions — Permanent, imposed and other actions (incorporating amendments 1 and 2) | B1.2 | 3.0.3 , 3.0.4 , 3.9.1.2 , 3.9.1.3 , 3.9.2 , 3.9.2.3 , | N/A |
| AS/NZS 1170 Part 2 | 2011 | Structural design actions — Wind actions (incorporating amendments 1, 2, 3, 4 and 5) | B1.2 , B1.4 , Spec B1.2 , FV1.1 , Schedule 3 | V2.2.1 , 3.0.3 , 3.5.1.0 , Schedule 3 | Schedule 3 |
| AS/NZS 1170 Part 3 | 2003 | Structural design actions — Snow and ice actions (incorporating amendments 1 and 2) | B1.2 , Schedule 3 | 3.0.3 , Schedule 3 | Schedule 3 |
| AS 1170 Part 4 | 2007 | Structural design actions — Earthquake actions in Australia (incorporating amendments 1 and 2) | B1.2 | 3.0.3 , 3.3.5.1 , 3.3.6.1 , 3.4.4.1 , 3.10.2.0 | N/A |
| AS 1191 | 2002 | Acoustics — Method for laboratory measurement of airborne sound transmission insulation of building elements | Spec F5.5 | N/A | N/A |
| AS 1273 | 1991 | Unplasticized PVC (UPVC) downpipe and fittings for rainwater | N/A | 3.5.3.2 | N/A |
| AS 1288 | 2006 | Glass in buildings — Selection and | B1.4 , Spec C2.5 , Spec C3.4 | 3.6.0 , 3.6.1 , 3.6.3 , | N/A |

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| | | installation (incorporating amendments 1, 2 and 3) | | | |
| 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 sand penetrometer test (incorporating amendment 1) | N/A | 3.2.2.2 | N/A |
| 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 | 3.5.1.2 | N/A |
| AS 1428 Part 1 | 2009 | Design for access and mobility — General requirements for access — New building work (incorporating amendments 1 and 2) | D2.10 , D2.15 , D2.17 , D3.1 , D3.2 , D3.3 , D3.6 , D3.9 , D3.10 , D3.12 , Spec D3.10 , E3.8 , F2.4 , G4.5 , Schedule 3 | Schedule 3 | Schedule 3 , E1.2 |
| AS 1428 Part 1 | 2001 | Design for access and mobility — General requirements for access — New building work | H2.7 , H2.8 , H2.10 , H2.15 | N/A | E1.2 |
| AS 1428 Part 1 (Supplement 1) | 1993 | Design for access and mobility — General requirements for access — Buildings — Commentary | H2.2 | N/A | N/A |
| AS 1428 Part 2 | 1992 | Design for access and mobility — Enhanced and additional requirements — Buildings and facilities | H2.2 , H2.3 , H2.4 , H2.5 , H2.7 , H2.10 , H2.11 , H2.12 , H2.13 , H2.14 | N/A | E1.2 |
| AS 1428 Part 4 | 1992 | Design for access and mobility — Tactile ground surface indicators for the orientation of people with vision impairment | H2.11 | 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 | D3.8 | N/A | N/A |

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| | | amendments 1 and 2) | | | |
| AS 1530 Part 1 | 1994 | Methods for fire tests on building materials, components and structures — Combustibility test for materials See Note 2 | Schedule 3 | Schedule 3 | Schedule 3 |
| 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 3 | Schedule 3 | Schedule 3 |
| AS/NZS 1530 Part 3 | 1999 | Methods for fire tests on building materials, components and structures — Simultaneous determination of ignitability, flame propagation, heat release and smoke release | Schedule 3 , Schedule 6 | Schedule 3 , Schedule 6 | Schedule 3 , Schedule 6 |
| 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 | A5.6 , C3.15 , C3.16 , Spec C1.13 , Spec C1.13a , Spec C3.15 , Spec D1.12 , Schedule 3 , Schedule 6 | A5.6 , 3.7.3.3 , Schedule 3 , Schedule 6 | A5.6 , Schedule 3 , Schedule 6 |
| AS 1562 Part 1 | 2018 | Design and installation of sheet roof and wall cladding — Metal See Note 3 | B1.4 , F1.5 | 3.5.1.0 , 3.5.5.0 | N/A |
| AS/NZS 1562 Part 2 | 1999 | Design and installation of sheet roof and wall cladding — Corrugated fibre-reinforced cement | F1.5 | N/A | N/A |
| AS/NZS 1562 Part 3 | 1996 | Design and installation of sheet roof and wall cladding — Plastic | B1.4 , F1.5 | 3.5.1.0 | N/A |
| AS 1657 | 2018 | Fixed platforms, walkways, stairways and ladders — Design, construction and installation | D1.16 , D1.17 , D2.18 , H1.6 , H3.5 | N/A | N/A |
| AS/NZS 1664 Part 1 | 1997 | Aluminium structures — Limit state design (incorporating amendment 1) | B1.4 | 3.0.4 | N/A |
| AS/NZS 1664 Part 2 | 1997 | Aluminium structures — Allowable stress design (incorporating | B1.4 | 3.0.4 | N/A |

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| | | amendment 1) | | | |
| AS 1668 Part 1 | 2015 | The use of ventilation and air conditioning in buildings — Fire and smoke control in buildings (incorporating amendment 1) | C2.12 , C3.15 , Spec C2.5 , D1.7 , Spec E1.8 , E2.2 , E2.3 , F4.12 , Spec E2.2b , Spec G3.8 | N/A | N/A |
| AS 1668 Part 2 | 2012 | The use of ventilation and airconditioning in buildings — Mechanical ventilation in buildings (incorporating amendments 1 and 2) | E2.3 , FV4.1 , F4.5 , F4.11 , F4.12 , J5.3 | V2.4.5 , 3.8.5.0 | N/A |
| AS 1668 Part 4 | 2012 | The use of ventilation and airconditioning in buildings — Natural ventilation of buildings | F4.11 | N/A | N/A |
| AS 1670 Part 1 | 2018 | Fire detection, warning, control and intercom systems — System design, installation and commissioning — Fire See Note 4 | C3.5 , C3.6 , C3.7 , C3.8 , C3.11 , D2.21 , E2.3 , G4.8 , Spec C3.4 , E2.2 , Spec E2.2a , Spec E2.2d , Spec G3.8 | 3.7.5.2 , 3.7.5.6 | N/A |
| AS 1670 Part 3 | 2018 | Fire detection, warning, control and intercom systems — System design, installation and commissioning — Fire alarm monitoring See Note 4 | Spec E2.2a , Spec E2.2d | 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 | EV3.2 , E4.9 , Spec G3.8 | N/A | N/A |
| AS/NZS 1680 Part 0 | 2009 | Interior lighting — Safe movement | F4.4 | 3.8.4.3 | N/A |
| AS 1684 Part 2 | 2010 | Residential timber-framed construction — Non-cyclonic areas (incorporating amendments 1 and 2) | B1.4 , B1.5 , F1.12 | 3.0.5 , 3.2.5.6 , 3.4.0.2 , 3.4.1.2 , 3.4.3.0 , 3.5.4.2 , 3.5.4.3 , 3.5.4.4 | N/A |
| AS 1684 Part 3 | 2010 | Residential timber-framed construction — Cyclonic areas (incorporating amendment 1) | B1.4 , B1.5 , F1.12 | 3.0.5 , 3.2.5.6 , 3.4.0.2 , 3.4.1.2 , 3.4.3.0 , 3.5.4.2 , 3.5.4.3 , 3.5.4.4 | N/A |
| AS 1684 Part 4 | 2010 | Residential timber-framed construction — Simplified — Non-cyclonic areas (incorporating amendment 1) | B1.4 , B1.5 , F1.12 | 3.0.5 , 3.2.5.6 , 3.4.0.2 , 3.4.1.2 , 3.4.3.0 , 3.5.4.2 , 3.5.4.3 , 3.5.4.4 | N/A |

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| AS 1720 Part 1 | 2010 | Timber structures — Design methods (incorporating amendments 1, 2 and 3) | BV1, B1.4 | V2.1.1, 3.4.3.0 | N/A |
| AS 1720 Part 4 | 2006 | Timber structures — Fire resistance for structural adequacy of timber members | Schedule 5 | Schedule 5 | Schedule 5 |
| AS 1720 Part 5 | 2015 | Timber structures — Nailplated timber roof trusses | B1.4 | 3.4.3.0 | N/A |
| AS 1735 Part 11 | 1986 | Lifts, escalators and moving walks — Fire-rated landing doors | C3.10 | N/A | N/A |
| AS 1735 Part 12 | 1999 | Lifts, escalators and moving walks — Facilities for persons with disabilities (incorporating amendment 1) | E3.6, H2.6 | N/A | N/A |
| AS/NZS 1859 Part 4 | 2018 | Reconstituted wood-based panels — Specifications — Wet process fibreboard See Note 5 | N/A | 3.5.4.3, 3.5.4.4 | N/A |
| AS 1860 Part 2 | 2006 | Particleboard flooring — Installation (incorporating amendment 1) | B1.4 | 3.4.3.0 | N/A |
| AS 1905 Part 1 | 2015 | Components for the protection of openings in fire-resistant walls — Fire-resistant doorsets (incorporating amendment 1) | C3.6, Spec C3.4 | N/A | N/A |
| AS 1905 Part 2 | 2005 | Components for the protection of openings in fire-resistant walls — Fire-resistant roller shutters | Spec C3.4 | N/A | N/A |
| AS 1926 Part 1 | 2012 | Swimming pool safety — Safety barriers for swimming pools | G1.1, G1.3 | 3.10.1.0 | N/A |
| AS 1926 Part 2 | 2007 | Swimming pool safety — Location of safety barriers for swimming pools (incorporating amendments 1 and 2) | G1.1 | 3.10.1.0 | N/A |
| AS 1926 Part 3 | 2010 | Swimming pool safety — Water recirculation systems (incorporating amendment 1) | G1.1 | 3.10.1.0 | N/A |
| AS 2047 | 2014 | Windows and external glazed doors in buildings (incorporating amendments 1 and 2) See Note 6 | B1.4, FV1.1, F1.13, J3.4 | V2.2.1, 3.6.0, 3.6.1, 3.12.3.3 | N/A |

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| AS 2049 | 2002 | Roof tiles (incorporating amendment 1) | F1.5 | 3.5.2.1 | N/A |
| AS 2050 | 2018 | Installation of roof tiles | B1.4 , F1.5 | 3.5.2.0 , 3.5.2.2 | N/A |
| AS 2118 Part 1 | 2017 | Automatic fire sprinkler systems — General systems (incorporating amendment 1) | CV3 , E1.3 , Spec E1.5 , Spec E1.5a | N/A | N/A |
| AS 2118 Part 4 | 2012 | Automatic fire sprinkler systems — Sprinkler protection for accommodation buildings not exceeding four storeys in height | E1.3 , Spec E1.5 , Spec E1.5a | N/A | N/A |
| AS 2118 Part 6 | 2012 | Automatic fire sprinkler systems — Combined sprinkler and hydrant systems in multistorey buildings | E1.3 , Spec E1.5 | N/A | N/A |
| AS 2159 | 2009 | Piling — Design and installation (incorporating amendment 1) | B1.4 | 3.2.0 | 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 | 3.5.3.2 | N/A |
| AS/NZS 2269 Part 0 | 2012 | Plywood — Structural — Specifications (incorporating amendment 1) | N/A | 3.5.4.4 | N/A |
| AS/NZS 2293 Part 1 | 2018 | Emergency lighting and exit signs for buildings — System design, installation and operation | E4.4 , E4.8 , Spec E4.8 , H3.15 | N/A | N/A |
| AS/NZS 2327 | 2017 | Composite structures — Composite steel-concrete construction in buildings | B1.4 , Schedule 5 | 3.0.4 , Schedule 5 | Schedule 5 |
| AS 2419 Part 1 | 2005 | Fire hydrant installations — System design, installation and commissioning (incorporating amendment 1) | C2.12 , E1.3 , Spec E1.5a , H3.9 | N/A | N/A |
| AS 2441 | 2005 | Installation of fire hose reels (incorporating amendment 1) | E1.4 | N/A | N/A |
| AS 2444 | 2001 | Portable fire extinguishers and fire blankets — Selection and location | E1.6 , H3.11 | N/A | N/A |
| AS 2665 | 2001 | Smoke/heat venting | Spec E2.2c , Spec | N/A | N/A |

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| | | systems — Design, installation and commissioning | G3.8 | | |
| AS/NZS 2699 Part 1 | 2000 | Built-in components for masonry construction — Wall ties | N/A | 3.3.5.10 | N/A |
| AS/NZS 2699 Part 3 | 2002 | Built-in components for masonry construction — Lintels and shelf angles (durability requirements) | N/A | 3.3.5.12 | N/A |
| AS 2870 | 2011 | Residential slabs and footings | F1.10 | 3.1.1.0, 3.1.3.4, 3.1.4.4, 3.2.0, 3.2.1, 3.2.2.4, 3.2.2.6, 3.2.3.2, 3.2.4.1, 3.2.5, 3.2.5.2, 3.2.5.6 | N/A |
| AS/NZS 2890 Part 6 | 2009 | Parking facilities — Off-street parking for people with disabilities | D3.5 | N/A | N/A |
| AS/NZS 2904 | 1995 | Damp-proof courses and flashings (incorporating amendments 1 and 2) | F1.9 | 3.3.5.7, 3.5.4.6, 3.10.6.3 | N/A |
| AS/NZS 2908 Part 1 | 2000 | Cellulose-cement products — Corrugated sheets | B1.4, F1.5 | N/A | N/A |
| AS/NZS 2908 Part 2 | 2000 | Cellulose-cement products — Flat sheets | Schedule 3 | 3.5.4.3, 3.5.4.4, 3.5.4.5, Schedule 3 | Schedule 3 |
| AS/NZS 2918 | 2018 | Domestic solid fuel burning appliances — Installation See Note 11 | G2.2 | 3.10.7.0, 3.10.7.4, 3.10.7.5 | N/A |
| AS/NZS 3013 | 2005 | Electrical installations — Classification of the fire and mechanical performance of wiring system elements | C2.13 | N/A | N/A |
| AS/NZS 3500 Part 0 | 2003 | Plumbing and drainage — Glossary of terms | A1.0 | A1.0 | A1.0 |
| AS/NZS 3500 Part 1 | 2018 | Plumbing and drainage — Water services | N/A | N/A | B1.4, B3.3, B4.2, B5.2, B5.3, B5.4, BS5.1.2, B6.4, B6.5, |
| AS/NZS 3500 Part 2 | 2018 | Plumbing and drainage — Sanitary plumbing and drainage | N/A | N/A | C1.3, CV2.2, C2.3, C2.4, |
| AS/NZS 3500 Part 3 | 2018 | Plumbing and drainage — Stormwater drainage | F1.1 | 3.1.3.0, 3.1.3.4, 3.5.3.0, 3.5.3.3, 3.5.3.5 | N/A |
| AS/NZS 3500 Part 4 | 2018 | Plumbing and drainage — Heated water services (incorporating amendment 1) | N/A | N/A | B2.2, B2.6, B2.7, B2.8, B2.9 |
| AS 3600 | 2018 | Concrete structures (incorporating | BV1, B1.4, Schedule 5 | V2.1.1, 3.0.4, 3.1.4.4, 3.2.2.4, | Schedule 5 |

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| | | amendment 1) | | 3.2.3.1, 3.2.5.6, Schedule 5 | |
| AS 3660 Part 1 | 2014 | Termite management — New building work (incorporating amendment 1) | B1.4, F1.9 | 3.1.4.2, 3.1.4.3 | N/A |
| AS 3660 Part 3 | 2014 | Termite management — Assessment criteria for termite management systems | N/A | 3.1.4.3 | N/A |
| AS/NZS 3666 Part 1 | 2011 | Air-handling and water systems of buildings — Microbial control — Design, installation and commissioning | F2.7, F4.5 | N/A | N/A |
| AS 3700 | 2018 | Masonry structures | B1.4, Schedule 5 | 3.3.1.0, 3.3.2.0, 3.3.3.0, 3.3.4.0, 3.3.5.0, 3.3.5.4, 3.3.6.0, 3.3.6.1, Schedule 5 | Schedule 5 |
| AS 3740 | 2010 | Waterproofing of domestic wet areas (incorporating amendment 1) | F1.7 | 3.8.1.2 | N/A |
| AS 3786 | 2014 | Smoke alarms using scattered light, transmitted light or ionization (incorporating amendment 1 and 2) See Note 7 | Spec E2.2a | 3.7.5.2, 3.7.5.6 | 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 JVa, J5.11 | N/A | N/A |
| AS 3959 | 2018 | Construction of buildings in bushfire-prone areas | G5.2 | 3.10.5.0 | N/A |
| AS/NZS 4020 | 2018 | Testing of products for use in contact with drinking water See Note 8 | A5.3 | A5.3 | A5.3, A5.6 |
| AS 4055 | 2012 | Wind loads for housing (incorporating amendment 1) | Schedule 3 | 3.0.3, Schedule 3 | Schedule 3 |
| AS 4072 Part 1 | 2005 | Components for the protection of openings in fire-resistant separating elements — Service penetrations and control joints (incorporating amendment 1) See Note 9 | C3.15 | 3.7.3.3 | N/A |
| AS 4100 | 1998 | Steel structures | B1.4, Schedule 5 | 3.2.5.6, 3.3.5.12, | Schedule 5 |

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| | | (incorporating amendment 1) | | 3.4.2.0, 3.4.4.0, 3.10.6.2, Schedule 5 | |
| AS/NZS 4200 Part 1 | 2017 | Pliable building membranes and underlays — Materials | F1.6, F6.2, Schedule 3 | 3.5.2.4, 3.5.4.2, 3.5.4.8, 3.8.7.2, Schedule 3 | Schedule 3 |
| AS 4200 Part 2 | 2017 | Pliable building membranes and underlays — Installation requirements (incorporating amendment 1) | F1.6, F6.2 | 3.8.7.2 | N/A |
| AS/NZS 4234 | 2008 | Heated water systems — Calculation of energy consumption (incorporating amendments 1, 2 and 3) | N/A | N/A | BV2.1, B2.2 |
| AS 4254 Part 1 | 2012 | Ductwork for air-handling systems in buildings — Flexible duct | Spec C1.10, J5.6 | 3.7.1.2, 3.12.5.3 | N/A |
| AS 4254 Part 2 | 2012 | Ductwork for air-handling systems in buildings — Rigid duct | Spec C1.10, J5.4, J5.6 | 3.12.5.3 | N/A |
| AS/NZS 4256 Part 1 | 1994 | Plastic roof and wall cladding materials — General requirements | F1.5 | N/A | N/A |
| AS/NZS 4256 Part 2 | 1994 | Plastic roof and wall cladding materials — Unplasticized polyvinyl chloride (uPVC) building sheets | F1.5 | N/A | N/A |
| AS/NZS 4256 Part 3 | 1994 | Plastic roof and wall cladding materials — Glass fibre reinforced polyester (GRP) | F1.5 | N/A | N/A |
| AS/NZS 4256 Part 5 | 1996 | Plastic roof and wall cladding materials — Polycarbonate | F1.5 | N/A | N/A |
| AS/NZS 4284 | 2008 | Testing of building facades | FV1.1 | V2.2.1 | N/A |
| AS/NZS 4505 | 2012 | Garage doors and other large access doors (incorporating amendment 1) | B1.4 | 3.0.4 | N/A |
| AS 4552 | 2005 | Gas fired water heaters for hot water supply and/or central heating | N/A | N/A | B2.2 |
| AS 4586 | 2013 | Slip resistance classification of new pedestrian surface materials (incorporating amendment 1) See Note 10 | D2.10, D2.13, D2.14, Spec F2.9 | 3.9.1.4 | N/A |
| AS 4597 | 1999 | Installation of roof slates and shingles (Non-interlocking type) | B1.4, F1.5 | 3.5.2.0 | N/A |

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| AS/NZS 4600 | 2018 | Cold-formed steel structures | B1.4, Schedule 5 | 3.4.2.0, 3.4.4.0, Schedule 5 | Schedule 5 |
| AS 4654 Part 1 | 2012 | Waterproofing membranes for external above-ground use — Materials | F1.4 | 3.8.1.3 | N/A |
| AS 4654 Part 2 | 2012 | Waterproofing membranes for external above-ground use — Design and installation | F1.4 | 3.8.1.3 | N/A |
| AS 4678 | 2002 | Earth-retaining structures | N/A | 3.1.2.0 | N/A |
| AS 4773 Part 1 | 2015 | Masonry in small buildings — Design (incorporating amendment 1) | N/A | 3.3.1.0, 3.3.2.0, 3.3.3.0, 3.3.4.0, 3.3.5.0, 3.3.5.4, 3.3.6.0 | N/A |
| AS 4773 Part 2 | 2015 | Masonry in small buildings — Construction | N/A | 3.3.1.0, 3.3.2.0, 3.3.3.0, 3.3.4.0, 3.3.5.0, 3.3.5.4, 3.3.6.0 | N/A |
| AS/NZS 4859 Part 1 | 2018 | Thermal insulation materials for buildings — General criteria and technical provisions | J1.2, J5.5, J5.8 | 3.12.1.1, 3.12.1.5, 3.12.5.1, 3.12.5.2, 3.12.5.3 | N/A |
| AS/NZS 4859 Part 2 | 2018 | Thermal insulation materials for buildings — Design | J1.2, Spec J1.5a | N/A | N/A |
| AS 5113 | 2016 | Classification of external walls of buildings based on reaction-to-fire performance (incorporating amendment 1) | CV3 | N/A | N/A |
| AS 5146 Part 1 | 2015 | Reinforced autoclaved aerated concrete — Structures (incorporating amendment 1) | B1.4 | 3.5.4.0 | N/A |
| AS 5216 | 2018 | Design of post-installed and cast-in fastenings in concrete | B1.4 | 3.0.4 | N/A |
| AS 5637 Part 1 | 2015 | Determination of fire hazard properties — Wall and ceiling linings | Spec C1.10, Schedule 3 | Schedule 3 | Schedule 3 |
| AS ISO 9239 Part 1 | 2003 | Reaction to fire tests for floorings — Determination of the burning behaviour using a radiant heat source | Schedule 3 | Schedule 3 | Schedule 3 |
| AS/NZS ISO 9972 | 2015 | Thermal performance of buildings — Determination of air permeability of buildings — Fan pressurization method | JV4 | V2.6.2.3 | N/A |
| AIRAH-DA09 | 1998 | Air conditioning load estimation | Spec JVc | N/A | N/A |
| AIRAH-DA28 | 2011 | Building management | Spec JVb | N/A | N/A |

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| | | and control systems | | | |
| ANSI/ASHRAE Standard 55 | 2013 | Thermal environmental conditions for human occupancy | Schedule 3 | Schedule 3 | Schedule 3 |
| ANSI/ASHRAE Standard 140 | 2007 | Standard method of test for the evaluation of building energy analysis computer programs | JV1, JV2, JV3 | V2.6.2.2 | N/A |
| ASTM E2073-10 | 2010 | Standard Test Method for Photopic Luminance of Photoluminescent (Phosphorescent) Markings | Spec E4.8 | N/A | N/A |
| ASTM E72-15 | 2015 | Standard Test Methods of Conducting Strength Tests of Panels for Building Construction | Spec C1.8 | N/A | N/A |
| ASTM E695-03 | 2003 | Standard Test Method of Measuring Relative Resistance of Wall, Floor and Roof Construction to Impact Loading | Spec C1.8 | N/A | N/A |
| ASTM E903 | 2012 | Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres | N/A | 3.12.1.2 | N/A |
| AHRI 460 | 2005 | Performance rating of remote mechanical-draft air-cooled refrigerant condensers | J5.12 | 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 JV a, J5.10 | N/A | N/A |
| ABCB | 2011 | Protocol for Structural Software, Version 2011.2 | B1.5 | 3.0.5, 3.4.0.2 | N/A |
| ABCB | 2012 | Standard for Construction of Buildings in Flood Hazard Areas, Version 2012.3 | B1.6 | 3.10.3.0 | N/A |
| ABCB | 2019 | Standard for NatHERS Heating and Cooling Load Limits, Version 2019.1 | J0.2 | 3.12.0.1 | N/A |
| CIBSE Guide A | 2015 | Environmental design | Spec JV b, Spec JV c, J1.2, J1.6 | N/A | N/A |
| Disability Standards for Accessible Public Transport | 2002 | | F2.9, H2.1 | N/A | N/A |

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|--|-------|--|---|---|----------------------------|
| Education and Care Services National Law Act (Vic) | 2010 | | Schedule 3 | Schedule 3 | Schedule 3 |
| European Union Commission Regulation 547/2012 | 2012 | Ecodesign requirements for water pumps | J5.7 | N/A | N/A |
| European Union Commission Regulation 622/Annex II, point 2 | 2012 | Eco-design requirements for glandless standalone circulators and glandless circulators integrated in products | J5.7 | N/A | N/A |
| FPAA101D | 2018 | Automatic Fire Sprinkler System Design and Installation — Drinking Water Supply | CV3, C1.5, C1.13, C2.1, C2.6, C2.7, C3.5, C3.6, C3.7, C3.8, C3.11, Spec C1.1, Spec C1.10, D1.3, D1.12, D2.21, D2.25, E1.3, Spec E1.5, Spec E1.5a, E2.2, Spec E2.2a, G3.1, G3.6, Spec G3.8, H1.2 | N/A | B4.2 |
| FPAA101H | 2018 | Automatic Fire Sprinkler System Design and Installation — Hydrant Water Supply | CV3, C1.5, C1.13, C2.1, C2.6, C2.7, Spec C1.1, Spec C1.10, E1.3, Spec E1.5, Spec E1.5a, E2.2, Spec E2.2a, G3.1, G3.6, Spec G3.8, H1.2 | N/A | B4.2 |
| 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 F5.5 | N/A | N/A |
| ISO 540 | 2008 | Hard coal and coke — Determination of ash fusibility | Spec C3.15 | N/A | N/A |
| ISO 8336 | 1993E | Fibre-cement flat sheets | Schedule 3 | 3.5.4.3, 3.5.4.4, 3.5.4.5, Schedule 3 | Schedule 3 |
| ISO 25745 Part 2 | 2012 | Energy performance of lifts, escalators and moving walks: Energy calculation and classification for lifts (elevators) | J6.7 | N/A | N/A |
| NASH Standard | 2014 | Steel Framed | N/A | 3.10.5.0 | N/A |

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| | | Construction in Bushfire Areas (incorporating amendment A) | | | |
| NASH Standard Part 1 | 2005 | Residential and Low-Rise Steel Framing — Design Criteria (incorporating amendments A, B and C) | B1.4 | 3.4.2.0 | N/A |
| NASH Standard Part 2 | 2014 | Residential and Low-Rise Steel Framing — Design Solutions (incorporating amendment A) | B1.4, B1.5, F1.12 | 3.0.5, 3.4.0.2, 3.4.1.2, 3.4.2.0, 3.5.4.4 | N/A |
| N/A | N/A | Northern Territory Deemed to Comply Standards Manual | N/A | 3.0.4 | N/A |
| TN 61 | | Cement Concrete and Aggregates Australia — Technical note — Articulated walling | N/A | 3.2.1 | N/A |

Notes associated with [Table 1](#):

- (1) For AS/NZS ISO 717.1:
 - (a) Test reports based on AS 1276—1979 and issued prior to AS/NZS 1276.1—1999 being referenced in the NCC remain valid.
 - (b) The STC values in reports based on AS 1276—1979 shall be considered to be equivalent to R_w values.
 - (c) 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.
 - (d) 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.
 - (e) 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:
 - (a) 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.
 - (b) 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:
 - (a) Notwithstanding [A4.0\(5\)](#), 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.
 - (b) From 1 May 2022 [A4.0\(5\)](#) 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.
- (5) For AS/NZS 1859.4, the 2004 edition has been retained for a transitional period ending on 30 April 2020.
- (6) For AS 2047:
 - (a) Tests carried out under earlier editions of AS 2047 remain valid.
 - (b) 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.

- (7) For AS 3786:
 - (a) Tests carried out under AS 3786—2014 Amendment 1 remain valid.
 - (b) 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.
- (8) 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.
- (9) 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.
- (10) For AS 4586:
 - (a) 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.
 - (b) Test reports prepared after the NCC reference date of the 2013 edition of AS 4586 must be based on that version.
 - (c) 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 AS 4586.
 - (d) 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.
 - (e) 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.
- (11) 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.

State and Territory variations for Volume One—Schedule of referenced documents

[ACT](#), [NSW](#), [NT](#), [Qld](#), [SA](#), [Tas](#), [Vic](#)

State and Territory variations for Volume Two—Schedule of referenced documents

[ACT](#), [NSW](#), [NT](#), [Qld](#), [SA](#), [Tas](#), [Vic](#), [WA](#)

State and Territory variations for Volume Three—Schedule of referenced documents

[ACT](#), [SA](#)

Fire-resistance of Building Elements

Schedule 5 Fire-resistance of building elements

Preview

Schedule 5 Fire-resistance of Building Elements

Schedule 5 Fire-resistance of building elements

1. Scope
2. Rating
3. FRLs determined by calculation
4. Interchangeable materials
5. Columns covered with lightweight construction
6. Non-loadbearing elements

Preview

Schedule 5 Fire-resistance of building elements

1. Scope

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

2. Rating

A building element meets the requirements of this Schedule if—

- (a) it is listed in, and complies with [Table 1](#) of this Schedule; 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 [Clause 3](#); or
- (f) for [fire-protected timber](#), it complies with [Specification C1.13a](#) where applicable.

3. FRLs determined by calculation

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.

4. Interchangeable materials

- (a) 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:

Group A: Any portland cement.

Group B: Any lime.

Group C: Any dense sand.

Group D: Any dense calcareous aggregate, including any limestone or any calcareous gravel.

Group E: Any dense siliceous aggregate, including any basalt, diorite, dolerite, granite, granodiorite or trachyte.

- (b) Perlite and vermiculite — An FRL achieved with either gypsum-perlite plaster or gypsum-vermiculite plaster applies equally for each plaster.

5. Columns covered with lightweight construction

If the *fire-resisting* covering of a steel column is *lightweight construction*, the construction must comply with C1.8 and C3.17.

6. Non-loadbearing elements

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.

Table 1 FRLs Deemed to be achieved by certain building element

| Building element | Minimum thickness (mm) of principal material for FRLs | | | | | Annexure reference |
|--|---|------------------------------------|-------------|-------------|-------------|--------------------|
| Wall | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| Masonry | | | | | | |
| Ashlar | — | — | — | — | 300 | 1, 2, 5, 6 |
| Calcium silicate | | see 2(d)(iv) of this Specification | | | | |
| Concrete | | see 2(d)(iv) of this Specification | | | | |
| Fired clay (inc terracotta) | | see 2(d)(iv) of this Specification | | | | |
| Concrete | | | | | | |
| No-fines | — | — | — | 150 | 170 | 1, 5, 6 |
| Prestressed | | see 2(d)(ii) of this Specification | | | | |
| Reinforced | | see 2(d)(ii) of this Specification | | | | |
| Plain | — | — | — | 150 | 170 | 1, 5, 6 |
| Solid gypsum blocks | 75 | 90 | 100 | 110 | 125 | 1, 5, 6 |
| Gypsum — perlite or Gypsum vermiculite- plaster on metal lath and channel (non-loadbearing walls only) | 50 | 50 | 65 | — | — | 1, 5, 7 |
| Concrete column | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| Prestressed | | see 2(d)(ii) of this Specification | | | | |

Fire-resistance of Building Elements

| Building element | Minimum thickness (mm) of principal material for FRLs | | | | | Annexure reference |
|---|---|------------------------------------|-------------|-------------|-------------|----------------------|
| Reinforced | | see 2(d)(ii) of this Specification | | | | |
| Hot-rolled steel column | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| (inc. a fabricated column) exposed on no more than 3 sides: | | | | | | 8 |
| Fire protection of Concrete | | | | | | |
| — Cast in-situ— | | | | | | |
| <i>loadbearing</i> | 25 | 30 | 40 | 55 | 75 | 9, 11, 12 |
| non- <i>loadbearing</i> — | | | | | | |
| unplastered | 25 | 30 | 40 | 50 | 65 | 9, 11, 12 |
| plastered 13 mm— | 25 | 25 | 30 | 40 | 50 | 1, 6, 9, 11, 12 |
| Gypsum — Cast in-situ | — | — | — | — | 50 | 9, 11, 12 |
| Gypsum — perlite or | | | | | | |
| Gypsum-vermiculite | | | | | | |
| plaster | | | | | | |
| sprayed to contour | 20 | 25 | 35 | 50 | 55 | 1, 11 |
| sprayed on metal lath | 20 | 20 | 25 | 35 | 45 | 1, 7 |
| Hot-rolled steel column | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| (inc. a fabricated column) exposed on no more than 3 sides and with column spaces filled: | | | | | | 8, 9 |
| Fire protection of— | | | | | | |
| Solid calcium-silicate masonry | 50 | 50 | 50 | 50 | 65 | 1, 3, 11, 12 |
| Solid clay masonry | 50 | 50 | 50 | 65 | 90 | 1, 3, 11, 12 |
| Solid concrete masonry | 50 | 50 | 50 | 65 | 90 | 1, 3, 11, 12 |
| Solid gypsum blocks | 50 | 50 | 50 | 50 | 65 | 1, 3, 11, 12 |
| Hollow terracotta blocks | | | | | | |
| plastered 13 mm | 50 | 50 | 50 | 65 | 90 | 1, 3, 6, 10., 11, 12 |
| Hot-rolled steel column | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| (inc. a fabricated column) exposed on no more than 3 sides and with column spaces unfilled: | | | | | | 8 |
| Fire protection of— | | | | | | |
| Solid calcium- silicate masonry | 50 | 50 | 50 | — | — | 1, 3, 11, 12 |
| Solid clay masonry | 50 | 50 | 65 | — | — | 1, 3, 11, 12 |
| Solid concrete masonry | 50 | 50 | 65 | — | — | 1, 3, 11, 12 |
| Solid gypsum blocks | 50 | 50 | 50 | — | — | 1, 3, 11, 12 |
| Hollow terracotta blocks— | | | | | | |
| plastered 13 mm | 50 | 50 | 65 | — | — | 1, 3, 6, 10, 11, 12 |
| Hot-rolled steel column | | | | | | |
| | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Clause |
| (inc. a fabricated column) exposed on 4 sides: | | | | | | 8 |
| Fire protection of— | | | | | | |
| Concrete — Cast in-situ— | | | | | | |
| <i>loadbearing</i> | 25 | 40 | 45 | 65 | 90 | 9, 11, 12 |
| non- <i>loadbearing</i> | | | | | | |
| unplastered | 25 | 30 | 40 | 50 | 65 | 9, 11, 12 |
| plastered 13 mm | 25 | 25 | 30 | 40 | 50 | 1, 6, 9, 11, 12 |
| Gypsum — Cast in-situ | — | — | — | — | 50 | 9, 11, 12 |
| Gypsum-perlite or | | | | | | |

Fire-resistance of Building Elements

| Building element | Minimum thickness (mm) of principal material for FRLs | | | | | Annexure reference |
|--|---|------------------------------------|-------------|-------------|-------------|---------------------|
| Gypsum-vermiculite plaster | | | | | | |
| sprayed to contour | 25 | 30 | 40 | 55 | 65 | 1, 11 |
| sprayed on metal lath | 20 | 20 | 30 | 40 | 50 | 1, 7 |
| Hot-rolled steel column | | | | | | |
| | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Clause |
| (inc. a fabricated column) exposed on 4 sides and with column spaces filled: | | | | | | 8, 9 |
| Fire protection of— | | | | | | |
| Solid calcium-silicate masonry | 50 | 50 | 50 | 65 | 75 | 1, 3, 11, 12 |
| Solid clay masonry | 50 | 50 | 50 | 75 | 100 | 1, 3, 11, 12 |
| Solid concrete masonry | 50 | 50 | 50 | 75 | 100 | 1, 3, 11, 12 |
| Solid gypsum blocks | 50 | 50 | 50 | 65 | 75 | 1, 3, 11, 12 |
| Hollow terracotta blocks— plastered 13 mm | 50 | 50 | 50 | 75 | 100 | 1, 3, 6, 10, 11, 12 |
| Hot-rolled steel column | | | | | | |
| | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Clause |
| (inc. a fabricated column) exposed on 4 sides and with column spaces unfilled: | | | | | | 8 |
| Fire protection of— | | | | | | |
| Solid calcium-silicate masonry | 50 | 50 | 50 | — | — | 1, 3, 11, 12 |
| Solid clay masonry | 50 | 50 | 65 | — | — | 1, 3, 11, 12 |
| Solid concrete masonry | 50 | 50 | 65 | — | — | 1, 3, 11, 12 |
| Solid gypsum blocks | 50 | 50 | 50 | — | — | 1, 3, 11, 12 |
| Hollow terracotta blocks— plastered 13 mm | 50 | 50 | 65 | — | — | 1, 3, 6, 10, 11, 12 |
| Beam | | | | | | |
| | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Clause |
| Concrete— | | | | | | |
| Prestressed | | see 2(d)(ii) of this Specification | | | | |
| Reinforced | | see 2(d)(ii) of this Specification | | | | |
| Hot-rolled Steel (inc. an open-web joist girder truss etc) exposed on no more than 3 sides: | | | | | | 8 |
| Fire protection of— | | | | | | |
| Concrete — Cast in-situ | 25 | 30 | 40 | 50 | 65 | 11, 12 |
| Gypsum-perlite or Gypsum-vermiculite plaster | | | | | | |
| sprayed to contour | 20 | 25 | 35 | 50 | 55 | 1, 11 |
| sprayed on metal lath | 20 | 20 | 25 | 35 | 45 | 1, 7 |
| Hot-rolled Steel (inc. an open-web joist girder truss etc) exposed on 4 sides: | | | | | | 8 |
| Fire protection of— | | | | | | |
| Concrete — Cast in-situ | 25 | 40 | 45 | 65 | 90 | 11, 12 |
| Gypsum-perlite or Gypsum-vermiculite plaster— | | | | | | |
| sprayed to contour | 25 | 30 | 40 | 55 | 65 | 1, 11 |
| sprayed on metal lath | 20 | 20 | 30 | 40 | 50 | 1, 7 |
| Floor, roof or ceiling | | | | | | |
| | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Clause |
| Concrete— | | | | | | |
| Prestressed | | see 2(d)(ii) of this Specification | | | | |

Fire-resistance of Building Elements

| Building element | Minimum thickness (mm) of principal material for FRLs | | | Annexure reference |
|------------------|---|------------------------------------|--|--------------------|
| Reinforced | | see 2(d)(ii) of this Specification | | |

Annexure to Table 1

1. Mortar, plaster and plaster reinforcement

1.1 Mortar for masonry

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.

1.2 Gypsum blocks

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

1.3 Gypsum-sand mortar and plaster

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.

1.4 Gypsum-perlite and gypsum-vermiculite plaster

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.

1.5 Plaster of cement and sand or cement, lime and sand

Plaster prescribed in Table 1 must consist of—

- (a) 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.

1.6 Plaster reinforcement

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, and with the reinforcement must be securely fixed at a distance from the face of the wall of not less than 1/3 of the total thickness of the plaster.

2. Ashlar stone masonry

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.

3. Dimensions of masonry

The thicknesses of masonry of calcium-silicate, concrete and fired clay are calculated as follows:

3.1 Solid units

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.

3.2 Hollow units

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.

3.3 Equivalent thickness

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

4. * * * * *

This Clause has deliberately been left blank.

5. Height-to-thickness ratio of certain walls

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.

6. Increase in thickness by plastering

6.1 Walls

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 [Table 1](#) (but not for the purposes of [Annexure Clause 5](#)) may be increased by the thickness of the plaster on one side.

6.2 Columns

Where [Table 1](#) indicates that column-protection is to be plastered, the tabulated thicknesses are those of the principal material. They do not include the thickness of plaster which must be additional to the listed thickness of the material to which it is applied.

7. Gypsum-perlite or gypsum-vermiculite plaster on metal lath

7.1 Walls

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.

7.2 Columns

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, and
the thickness of the plaster must be measured from the back of the lath.

7.3 Beams

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.

8. Exposure of columns and beams

8.1 Columns

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.

8.2 Beams

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.

9. Filling of column spaces

- (a) 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.
- (b) The insides of hollow sections, including pipes, need not be filled.

10. Hollow terracotta blocks

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%.

11. Reinforcement for column and beam protection

11.1 Masonry

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.

11.2 Gypsum blocks and hollow terracotta blocks

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.

11.3 Structural concrete and poured gypsum

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) not less than 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) not less than 5 mm in diameter and spaced at not more than 150 mm vertically.

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

- (a) 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 [Table 11.4](#), the plaster must be reinforced with—
 - (i) expanded metal lath complying with [Clause 1.6 of this Annexure](#); or
 - (ii) galvanised steel wire mesh complying with [Clause 1.6 of this Annexure](#).
- (b) 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 [Table 11.4](#).
- (c) For the purposes of [Table 11.4](#)—
 - (i) “vertical” includes a surface at not more than 10° to the vertical; and
 - (ii) “horizontal” includes a surface at not more than 10° to the horizontal; and
 - (iii) “underside” means the underside of any horizontal or non-vertical surface.

Table 11.4 Reinforcement of gypsum-perlite or gypsum-vermiculite plaster sprayed to contour

| Surface to be protected | Reinforcement required if smaller dimension of surface exceeds (mm) | Max spacing of fixings of the mesh to surface (mm) |
|---|---|--|
| Vertical members with H or I cross-section | 450 | 450 |
| Non-vertical members with H or I cross-section | 300 | 300 |
| Underside members with H or I cross section | 300 | 300 |
| Upper sides of horizontal surface members with H or I cross-section | Not required | N/A |
| Vertical members with other shapes | Any size | 450 |
| Non-vertical members with other shapes | Any size | 300 |
| Underside members with other shapes | Any size | 300 |
| Upper side of horizontal surface members with other shapes | Not required | N/A |

12. Thickness of column and beam protection

12.1 Measurement of thickness

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 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.

Fire-resistance of Building Elements

Table 1a Minimum thickness (mm) of principal material for FRLs deemed to be achieved by wall building elements

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|---|----------|------------------------------------|------------------------------------|------------------------------------|-------------|--------------------|
| Ashlar masonry | N/A | N/A | N/A | N/A | 300 mm | Clauses 1, 2, 5, 6 |
| Calcium silicate masonry | N/A | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | N/A | N/A |
| Concrete masonry | N/A | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | N/A | N/A |
| Fired clay (inc terracotta) masonry | N/A | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | see 2(d)(iv) of this Specification | N/A | N/A |
| No-fines concrete | N/A | N/A | N/A | 150 mm | 170 mm | Clauses 1, 5, 6 |
| Prestressed concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |
| Reinforced concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |
| Plain concrete | N/A | N/A | N/A | 150 mm | 170 mm | Clauses 1, 5, 6 |
| Solid gypsum blocks | 75 mm | 90 mm | 100 mm | 110 mm | 125 mm | Clauses 1, 5, 6 |
| Gypsum — perlite or Gypsum vermiculite-plaster on metal lath and channel (non-loadbearing walls only) | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 5, 7 |

Table 1b Minimum thickness (mm) of principal material for FRLs deemed to be achieved by concrete column building elements

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|-----------------------------|----------|------------------------------------|------------------------------------|------------------------------------|-------------|--------------------|
| Prestressed concrete column | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |
| Reinforced concrete column | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |

Table 1c Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel column building element inc. a fabricated column exposed on no more than 3 sides (Clause 8)

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|--|----------|----------|-------------|-------------|-------------|--------------------|
| Fire protection of Concrete — Cast in-situ—loadbearing | 25 mm | 30 mm | 40 mm | 55 mm | 75 mm | Clauses 9, 11, 12 |

Fire-resistance of Building Elements

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|--|----------|----------|-------------|-------------|-------------|-------------------------|
| Fire protection of Concrete — Cast in-situ— non-loadbearing unplastered | 25 mm | 30 mm | 40 mm | 50 mm | 65 mm | Clauses 9, 11, 12 |
| Fire protection of Concrete — Cast in-situ— non-loadbearing—plastered 13 mm— | 25 mm | 25 mm | 30 mm | 40 mm | 50 mm | Clauses 1, 6, 9, 11, 12 |
| Fire protection of Gypsum— Cast in-situ | N/A | N/A | N/A | N/A | 50 mm | Clauses 9, 11, 12 |
| Fire protection of Gypsum— perlite or Gypsum vermiculite plaster sprayed to contour | 20 mm | 25 mm | 35 mm | 50 mm | 55 mm | Clauses 1, 11 |
| Fire protection of Gypsum— perlite or Gypsum vermiculite plaster sprayed on metal lath | 20 mm | 20 mm | 25 mm | 35 mm | 45 mm | Clauses 1, 7 |

Table 1d Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel column building element inc. a fabricated column exposed on no more than 3 sides and with column spaces filled (Clauses 8, 9)

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|--|----------|----------|-------------|-------------|-------------|-----------------------------|
| Fire protection of—Solid calcium-silicate masonry | 50 mm | 50 mm | 50 mm | 50 mm | 65 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid clay masonry | 50 mm | 50 mm | 50 mm | 65 mm | 90 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid concrete masonry | 50 mm | 50 mm | 50 mm | 65 mm | 90 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid gypsum blocks | 50 mm | 50 mm | 50 mm | 50 mm | 65 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Hollow terracotta blocks plastered 13mm | 50 mm | 50 mm | 50 mm | 65 mm | 90 mm | Clauses 1, 3, 6, 10, 11, 12 |

Table 1e Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel

Fire-resistance of Building Elements

column building element inc. a fabricated column exposed on no more than 3 sides and with column spaces unfilled (Clause 8)

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|--|----------|----------|-------------|-------------|-------------|-----------------------------|
| Fire protection of—Solid calcium-silicate masonry | 50 mm | 50 mm | 50 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid clay masonry | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid concrete masonry | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid gypsum blocks | 50 mm | 50 mm | 50 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Hollow terracotta blocks—plastered 13mm | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 6, 10, 11, 12 |

Table 1f Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel column building element inc. a fabricated column exposed on 4 sides (Clause 8)

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|--|--------|--------|---------|---------|---------|-------------------------|
| Fire protection of—Concrete—Cast in situ— <i>loadbearing</i> | 25 mm | 40 mm | 45 mm | 65 mm | 90 mm | Clauses 9, 11, 12 |
| Fire protection of—Concrete—Cast in situ—non- <i>loadbearing</i> —unplastered | 25 mm | 30 mm | 40 mm | 50 mm | 65 mm | Clauses 9, 11, 12 |
| Fire protection of—Concrete—Cast in situ—non- <i>loadbearing</i> —plastered 13 mm | 25 mm | 25 mm | 30 mm | 40 mm | 50 mm | Clauses 1, 6, 9, 11, 12 |
| Fire protection of—Gypsum—Cast in situ | N/A | N/A | N/A | N/A | 50 mm | Clauses 9, 11, 12 |
| Fire protection of—Gypsum perlite or Gypsum vermiculite plaster sprayed to contour | 25 mm | 30mm | 40 mm | 55 mm | 65 mm | Clauses 1, 11 |
| Fire protection of—Gypsum | 20 mm | 20 mm | 30 mm | 40 mm | 50 mm | Clauses 1, 7 |

Fire-resistance of Building Elements

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|---|--------|--------|---------|---------|---------|--------------------|
| perlite or Gypsum vermiculite plaster sprayed on metal lath | | | | | | |

Table 1g Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel column building element (inc. a fabricated column) exposed on 4 sides and with column spaces filled (Clause 8, 9)

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|--|--------|--------|---------|---------|---------|-----------------------------|
| Fire protection of—Solid calcium silicate masonry | 50 mm | 50 mm | 50 mm | 65 mm | 75 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid clay masonry | 50 mm | 50 mm | 50 mm | 75 mm | 100 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid concrete masonry | 50 mm | 50 mm | 50 mm | 75 mm | 100 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid gypsum blocks | 50 mm | 50 mm | 50 mm | 65 mm | 75 mm | Clauses 1, 3, 11, 12 |
| Fire protection of—Hollow terracotta blocks—plastered 13mm | 50 mm | 50 mm | 50 mm | 75 mm | 100 mm | Clauses 1, 3, 6, 10, 11, 12 |

Table 1h Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel column building element (inc. a fabricated column) exposed on 4 sides and with column spaces unfilled (Clause 8)

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|--|--------|--------|---------|---------|---------|-----------------------------|
| Fire protection of—Solid calcium silicate masonry | 50 mm | 50 mm | 50 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid clay masonry | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid concrete masonry | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Solid gypsum blocks | 50 mm | 50 mm | 50 mm | N/A | N/A | Clauses 1, 3, 11, 12 |
| Fire protection of—Hollow terracotta blocks—plastered 13 | 50 mm | 50 mm | 65 mm | N/A | N/A | Clauses 1, 3, 6, 10, 11, 12 |

Fire-resistance of Building Elements

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|------------------|--------|--------|---------|---------|---------|--------------------|
| mm | | | | | | |

Table 1i Minimum thickness (mm) of principal material for FRLs deemed to be achieved by concrete beam building elements

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|----------------------|--------|------------------------------------|------------------------------------|------------------------------------|---------|--------------------|
| Prestressed concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |
| Reinforced concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |

Table 1j Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel building element inc. an open-web joist girder truss etc exposed on no more than 3 sides (Clause 8)

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|---|--------|--------|---------|---------|---------|--------------------|
| Fire protection of—Concrete—Cast in-situ | 25 mm | 30 mm | 40 mm | 50 mm | 65 mm | Clauses 11, 12 |
| Fire protection of—Gypsum-perlite or Gypsum-vermiculite plaster sprayed to contour | 20 mm | 25 mm | 35 mm | 50 mm | 55mm | Clauses 1, 11 |
| Fire protection of—Gypsum-perlite or Gypsum-vermiculite plaster sprayed on metal lath | 20 mm | 20 mm | 25 mm | 35 mm | 45 mm | Clauses 1, 7 |

Table 1k Minimum thickness (mm) of principal material for FRLs deemed to be achieved by a hot-rolled steel building element inc. an open-web joist girder truss etc exposed on 4 sides (Clause 8)

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|--|--------|--------|---------|---------|---------|--------------------|
| Fire protection of—Concrete—Cast in-situ | 25 mm | 40 mm | 45 mm | 65 mm | 90 mm | Clauses 11, 12 |
| Fire protection of—Gypsum-perlite or Gypsum-vermiculite plaster—sprayed to contour | 25 mm | 30 mm | 40 mm | 55 mm | 65 mm | Clauses 1, 11 |
| Fire protection of—Gypsum-perlite or Gypsum- | 20 mm | 20 mm | 30 mm | 40 mm | 50 mm | Clauses 1, 7 |

Fire-resistance of Building Elements

| Building element | 60/-/- | 90/-/- | 120/-/- | 180/-/- | 240/-/- | Annexure reference |
|--|--------|--------|---------|---------|---------|--------------------|
| vermiculite plaster— sprayed on metal lath | | | | | | |

Table 1I Minimum thickness (mm) of principal material for FRLs deemed to be achieved by floor, roof or ceiling building elements

| Building element | 60/60/60 | 90/90/90 | 120/120/120 | 180/180/180 | 240/240/240 | Annexure reference |
|----------------------|----------|------------------------------------|------------------------------------|------------------------------------|-------------|--------------------|
| Prestressed concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |
| Reinforced concrete | N/A | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | see 2(d)(ii) of this Specification | N/A | N/A |

ANNEXURE TO TABLES 1a-I

1. MORTAR, PLASTER AND PLASTER REINFORCEMENT

1.1 Mortar for masonry

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.

1.2 Gypsum blocks

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

1.3 Gypsum-sand mortar and plaster

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.

1.4 Gypsum-perlite and gypsum-vermiculite plaster

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.

1.5 Plaster of cement and sand or cement, lime and sand

Plaster prescribed in [Tables 1a-I](#) must consist of—

- (a) 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.

1.6 Plaster reinforcement

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, and with the reinforcement must be securely fixed at a distance from the face of the wall of not less than 1/3 of the total thickness of the plaster.

2. ASHLAR STONE MASONRY

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.

3. DIMENSIONS OF MASONRY

The thicknesses of masonry of calcium-silicate, concrete and fired clay are calculated as follows:

3.1 Solid units

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.

3.2 Hollow units

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.

3.3 Equivalent thickness

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

4. * * * * *

This Clause has deliberately been left blank.

5. HEIGHT-TO-THICKNESS RATIO OF CERTAIN WALLS

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.

6. INCREASE IN THICKNESS BY PLASTERING

6.1 Walls

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 1a-l](#) (but not for the purposes of [Annexure Clause 5](#)) may be increased by the thickness of the plaster on one side.

6.2 Columns

Where [Tables 1a-l](#) indicates that column-protection is to be plastered, the tabulated thicknesses are those of the principal material. They do not include the thickness of plaster which must be additional to the listed thickness of the material to which it is applied.

7. GYPSUM-PERLITE OR GYPSUM-VERMICULITE PLASTER ON METAL LATH

7.1 Walls

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.

7.2 Columns

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, and
- the thickness of the plaster must be measured from the back of the lath.

7.3 Beams

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.

8. EXPOSURE OF COLUMNS AND BEAMS

8.1 Columns

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.

8.2 Beams

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.

9. FILLING OF COLUMN SPACES

- (a) 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.
- (b) The insides of hollow sections, including pipes, need not be filled.

10. HOLLOW TERRACOTTA BLOCKS

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%.

11. REINFORCEMENT FOR COLUMN AND BEAM PROTECTION

11.1 Masonry

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.

11.2 Gypsum blocks and hollow terracotta blocks

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.

11.3 Structural concrete and poured gypsum

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.

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

- (a) 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 Table 11.4, the plaster must be reinforced with—
 - (i) expanded metal lath complying with Clause 1.6 of this Annexure; or
 - (ii) galvanised steel wire mesh complying with Clause 1.6 of this Annexure.
- (b) 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 Table 11.4.
- (c) For the purposes of Table 11.4—
 - (i) “vertical” includes a surface at not more than 10° to the vertical; and
 - (ii) “horizontal” includes a surface at not more than 10° to the horizontal; and
 - (iii) “underside” means the underside of any horizontal or non-vertical surface.

Table 11.4 Reinforcement of gypsum-perlite or gypsum-vermiculite plaster sprayed to contour

| Surface to be protected | Reinforcement required if smaller dimension of surface exceeds (mm) | Max spacing of fixings of the mesh to surface (mm) |
|---|---|--|
| Vertical members with H or I cross-section | 450 mm | 450 mm |
| Non-vertical members with H or I cross-section | 300 mm | 300 mm |
| Underside members with H or I cross section | 300 mm | 300 mm |
| Upper sides of horizontal surface members with H or I cross-section | Not required | N/A |
| Vertical members with other shapes | Any size | 450 mm |
| Non-vertical members with other shapes | Any size | 300 mm |
| Underside members with other shapes | Any size | 300 mm |
| Upper side of horizontal surface members with other shapes | Not required | N/A |

12. THICKNESS OF COLUMN AND BEAM PROTECTION

12.1 Measurement of thickness

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 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.

Preview

Fire Hazard Properties

Schedule 6 Fire hazard properties

Preview

Schedule 6 Fire Hazard Properties

Schedule 6 Fire hazard properties

1. Scope
2. Assemblies
 - 2.1 General requirement
 - 2.2 Form of test
 - 2.3 Test specimens
 - 2.4 Concession
 - 2.5 Smaller specimen permitted

Preview

Schedule 6 Fire hazard properties

1. Scope

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

2. Assemblies

2.1 General requirement

The *fire hazard properties* of assemblies and their ability to screen their core materials as *required* under *Specification C1.10* must be determined by testing in accordance with this Clause.

2.2 Form of test

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.

2.3 Test specimens

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.

2.4 Concession

Clause 2.3 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.

2.5 Smaller specimen permitted

A testing laboratory may carry out the test specified in *Clause 2.2(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.

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2.11 Design scenario (RC)

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Schedule 7 Fire Safety Verification Method

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 - 2.8.2 Typical method or solution
- 2.9 Design scenario (UF)**
 - 2.9.1 Design scenario description
 - 2.9.2 Typical method or solution
- 2.10 Design scenario (CF)**
 - 2.10.1 Design scenario description

2.10.2 Typical method or solution

2.11 Design scenario (RC)

2.11.1 Design scenario description

2.11.2 Typical method or solution

2.12 Design scenario (SS)

2.12.1 Design scenario description

2.12.2 Typical method or solution

Preview

1.0 Preface

Note:

[Schedule 7](#) does not take effect until 1 May 2020.

This Fire Safety Verification Method provides a process for engineering the design of fire safety [Performance Solutions](#). The document provides the flexibility required to develop [Performance Solutions](#) while still maintaining the level of safety required by the NCC.

To ensure that the level of safety [required](#) by the NCC is maintained, the level of safety achieved using this [Verification Method](#) must be at least equivalent to the relevant NCC Volume One [Deemed-to-Satisfy Provisions](#).

Section 1 of this document provides an introduction to the [Verification Method](#) and its application.

Section 2 describes the [design fire](#) scenarios.

Preview

1.1 Purpose

This *Verification Method* presents specific *design scenarios* that must be considered in order to demonstrate that the fire safety aspects of a building design comply with the fire safety *Performance Requirements* of NCC Volume One set out in *Table 1.1*. The level of safety achieved by the building design must be at least equivalent to the relevant *Deemed-to-Satisfy Provisions*.

For the purposes of developing a *Performance Solution*, this *Verification Method* must only be used by fire safety engineers who are suitably qualified and experienced, and—

- have demonstrated competency in *fire safety engineering*; and
- are proficient in the use of fire engineering modelling methods; and
- are familiar with fire testing and validation of computational data.

This Verification Method is not a comprehensive guide to fire safety. The International Fire Engineering Guidelines (2005), provides more comprehensive guidelines on fire safety calculation procedures. The ABCB Fire Safety Verification Method Handbook provides specific guidance on the following as relevant to this *Verification Method*:

- Occupant characteristics.
- Rules and parameters of *design scenarios*.
- Guidelines on modelling.
- Documentation.

Explanatory information:

This *Verification Method* is one way, but not the only way, to demonstrate compliance with the *Performance Requirements* set out in *Table 1.1*. *Performance Solutions* developed from first principles, or meeting the relevant *Deemed-to-Satisfy Provisions*, remain acceptable ways to demonstrate compliance.

Also, other *Performance Requirements* not covered by this *Verification Method* may need to be considered in order to comply with *A2.2(3)* and *A2.4(3)* as applicable.

1.2 How to use this Verification Method

This *Verification Method* sets out twelve *design scenarios* that must be considered in order to demonstrate that a building incorporating one or more *Performance Solutions* satisfies the *Performance Requirements* set out in *Table 1.1*.

Each *design scenario* must consider one or more locations in the building that capture the range of reasonable possibilities in relation to the threat to safety. The level of safety that the building design achieves must be at least equivalent to the relevant *Deemed-to-Satisfy Provisions*.

All *design scenarios* applicable to a *Performance Requirement* must be assessed to demonstrate compliance with that *Performance Requirement*.

Explanatory information:

In many cases the location that is the most challenging for a particular *design scenario* will be easily determined. Where it is not easily determined, the particular *design scenario* should be run in multiple locations to ensure the most challenging location is modelled.

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1.3 Performance-based design

1.3.1 Performance-based design brief (PBDB)

When using this *Verification Method*, the fire safety engineer must undertake a *performance-based design brief (PBDB)* that must involve all stakeholders relevant to the building design. The *PBDB* must also outline the fire strategy to be adopted.

While full agreement on all aspects of the *PBDB* is the preferred outcome, it is acknowledged that in some instances this may not be possible to obtain. In the event that full agreement cannot be achieved through the *PBDB*, dissenting views must be appropriately recorded and carried throughout the process and considered as part of the due processes of the *appropriate authority* when determining compliance and providing approval.

Consideration of whether a peer review (by an independent fire safety engineer) of some or all of the proposed *Performance Solutions* and the supporting analysis is required or not, must be undertaken at this *PBDB* stage.

Explanatory information:

When developing a *Performance Solution*, a *PBDB* is an important step in the process. It allows all relevant stakeholders to be involved in the development of the building design and its *fire safety system*.

A *PBDB* is a documented process that defines the scope of work for the fire engineering analysis. Its purpose is to set down the basis, as agreed by the relevant stakeholders, on which the fire safety analysis of the proposed building and its *Performance Solutions* will be undertaken.

Relevant stakeholders will vary from design to design. However, some examples of relevant stakeholders are: a fire safety engineer, architect, developer, client, *appropriate authority* (some state legislation prevents *appropriate authorities* from being involved in the design process), fire authority and other stakeholders that fire safety design may affect such as insurers. Further information on the relevant stakeholders is provided in Clause 1.3.1.2.

Guidance on the development of a *PBDB* is presented in the International Fire Engineering Guidelines (2005) and referred to as a Fire Engineering Brief in that document.

1.3.1.1 Fire strategy

The *PBDB* must cover the fire safety strategy for the building, outlining the philosophy and approach that will be adopted to achieve the required level of performance. The fire safety strategy must pay particular attention to the evacuation strategy to be used and the management regimes necessary.

1.3.1.2 Stakeholder involvement

The *PBDB* must be developed collaboratively by the relevant stakeholders in the particular project. The following parties must be involved:

- Client or client's representative (such as project manager)
- Fire engineer
- Architect or designer
- Various specialist consultants
- Fire service (public or private)
- *Appropriate authority* (Authority Having Jurisdiction – subject to state legislation)
- Tenants or tenants representative for the proposed building (if available)
- Building operations management (if available).

Conducting a simple stakeholder analysis can be used to determine who must be involved in the *PBDB* process. This analysis must identify stakeholders with a high level of interest in the design process, and/or likely to be affected by the consequences of a fire should it occur in the building.

1.3.1.3 Required level of safety

Given the absence of specific safety targets in the NCC and the qualitative nature of the NCC fire safety *Performance Requirements*, for this *Verification Method* to ensure the level of safety expected, the proposed building design must be at least equivalent to the relevant *Deemed-to-Satisfy Provisions*.

As the NCC *Deemed-to-Satisfy Provisions* evolved originally from State and Territory regulations and are regularly

Fire Safety Verification Method

updated to reflect technical advances and experience they are commonly accepted as providing an acceptable benchmark. It is accepted that the NCC *Deemed-to-Satisfy Provisions* reflect societal expectations in terms of fire safety, which address individual risk, societal risk and the robustness in the design by adopting a defence in depth approach.

In the majority of *design scenarios* the *Verification Method* requires a demonstration that the proposed level of safety is at least equivalent to the *Deemed-to-Satisfy Provisions*. In relation to the required level of safety the *PBDB* process must—

- (a) identify the relevant *Deemed-to-Satisfy Provisions* to be used in the equivalency process to determine whether the relevant *Performance Requirements* have been met; and
- (b) consider the specific size, complexity and use of the building with regards to the *Deemed-to-Satisfy Provisions* to be used in the equivalency process; and
- (c) consider the specific occupant profile of the building, paying particular attention to occupants with a disability and the vulnerable, in regards to the *Deemed-to-Satisfy Provisions* to be used in the equivalency process.

1.3.2 Final report

Once the analysis of all relevant *design scenarios* for all the required *Performance Solutions* has been completed, the fire safety engineer must prepare a final report that includes the following:

- The agreed *PBDB*.
- All modelling and analysis.
- Analysis required to demonstrate that the proposed building provides a level of safety at least equivalent to the relevant *Deemed-to-Satisfy Provisions*.
- Any other information required to clearly demonstrate that the building and its *fire safety system* satisfies the relevant *Performance Requirements* as set out in Table 1.1.

1.4 Design scenarios: NCC Performance Requirements

This *Verification Method* presents specific *design scenarios* that must be considered in order to demonstrate that the fire safety aspects of a building design comply with the fire safety *Performance Requirements* set out in *Table 1.1*.

The *design scenarios* specified in Section 2 are summarised in *Table 1.1*.

Table 1.1 Key features of design scenarios

| <i>Design scenario</i> | <i>Performance Requirement</i> <i>Note 1</i> | <i>Outcome required</i> <i>Note 3</i> | <i>Typical method or solution</i> |
|---|---|---|---|
| BE Fire blocks <i>evacuation route</i> (2.1). [A fire blocks an <i>evacuation route</i>] | CP1, CP2, CP3, CP8, DP4, DP5, DP6, DP7 ^{Note 2} , EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Demonstrate that a viable <i>evacuation route</i> (or multiple <i>evacuation routes</i> where necessary) has been provided for building occupants. |
| UT Fire in a normally unoccupied room threatens occupants of other rooms (2.2). [A fire starts in a normally unoccupied room and can potentially endanger a large number of occupants in another room] | CP1, CP2, CP3, CP8, DP4, DP5, EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | <i>ASET / RSET</i> analysis or provide separating construction or fire suppression complying with a specified Standard. Solutions might include the use of <i>separating elements</i> or fire suppression to confine the fire to the room of origin. |
| CS Fire starts in concealed space (2.3). [A fire starts in a concealed space that can facilitate fire spread and potentially endanger a large number of people in a room] | CP1, CP2, CP3, CP6, CP8, DP4, DP5, DP6, EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that fire spread via concealed spaces will not endanger occupants; and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Solutions might include providing separating construction or fire suppression or <i>automatic</i> detection complying with a specified Standard. |
| SF Smouldering fire (2.4). [A fire is smouldering in close proximity to a sleeping area] | CP2, CP3, CP8, DP4, DP5, DP6, EP1.1, EP1.2, EP1.3, EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Solutions might include providing <i>automatic</i> detection and alarm system complying with a recognised Standard. |
| HS Horizontal fire spread (2.5). [A <i>fully developed fire</i> in a building exposes the <i>external walls</i> of a neighbouring building] | CP2 | Demonstrate that the risk of fire spread between buildings is not greater than buildings complying with the <i>Deemed-to-Satisfy Provisions</i> . | CV1, CV2. |
| VS Vertical fire spread involving cladding or arrangement of openings in walls (2.6). [A fire source exposes a wall and leads to significant vertical fire spread] | CP2, CP4, CP7, CP8, EP2.2 | Demonstrate that the building's external cladding / facade and arrangement of openings in the building do not increase the risk to life resulting from a fire beyond that for a similar building complying with the <i>Deemed-to-Satisfy Provisions</i> . | CV3. |
| IS Fire spread involving | CP2, CP4, DP4, DP5, DP6, EP1.1, EP1.4, EP2.1, | Maintain tenable conditions to allow time for evacuation | <i>ASET / RSET</i> analysis or equivalent growth and |

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| Design scenario | Performance Requirement Note 1 | Outcome required Note 3 | Typical method or solution |
|---|---|---|--|
| internal finishes (2.7). [Interior surfaces are exposed to a growing fire that potentially endangers occupants]. | EP2.2, EP4.1, EP4.2, EP4.3 | of occupants and to facilitate <i>fire brigade</i> intervention; and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | species production rates. |
| FI <i>Fire brigade</i> intervention (2.8). [Consider <i>fire brigade</i> intervention] | CP1, CP2, CP5, CP7, CP9, DP5, EP1.3, EP1.6, EP2.2, EP3.2 | Demonstrate consideration of potential <i>fire brigade</i> intervention; and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Facilitate <i>fire brigade</i> intervention to the degree necessary. |
| UF Unexpected Catastrophic Failure (2.9). [A building must not unexpectedly collapse during a fire event] | CP1, CP2, CP9 | Demonstrate that the building, its critical elements and the <i>fire safety system</i> provide sufficient robustness such that unexpected catastrophic failure is unlikely; and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Undertake review or risk assessment of critical elements within a building to determine unexpected catastrophic failure is unlikely. |
| CF Challenging fire (2.10). [Worst credible fire] | CP1, CP2, CP3, CP8, DP4, DP5, DP6, EP1.1, EP1.2, EP1.3, EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | <i>ASET</i> / <i>RSET</i> analysis. |
| RC Robustness check (2.11). [Failure of a critical part of the <i>fire safety systems</i> will not result in the design not meeting the Objectives of the BCA] | CP1, CP2, CP3, CP8, DP4, DP5, DP7 ^{Note 2} , EP1.1, EP1.2, EP1.3, EP1.4, EP2.1, EP2.2, EP4.1, EP4.2, EP4.3 | Demonstrate that if a key component of the <i>fire safety system</i> fails, the design is sufficiently robust that a disproportionate spread of fire does not occur (e.g. <i>ASET</i> / <i>RSET</i> for the remaining floors or <i>fire compartments</i> is satisfied); and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Modified <i>ASET</i> / <i>RSET</i> analysis. |
| SS Structural Stability and other properties (2.12). [Building does not present risk to other properties in a fire event] | CP1, CP5 | Demonstrate that the building does not present an unacceptable risk to other property due to collapse or barrier failure resulting from a fire; and Demonstrate that the level of safety is at least equivalent to the <i>Deemed-to-Satisfy Provisions</i> . | Undertake analysis of structure and <i>fire safety systems</i> . |

Notes to Table 1.1:

- Not all of these requirements will always be applicable to this *design scenario*. The project specific *Performance Requirements* must be determined as part of the *performance-based design brief* process.

2. Appropriate analysis of DP7 is also required where a lift is intended to be used to assist occupants to evacuate.
3. When *required* to demonstrate that the level of safety is at least equivalent to the *Deemed-to-Satisfy Provisions* refer to [Clause 1.3.1.3](#).

Table 1.2 List of Performance Requirements and relevant design scenario

| <i>Performance Requirement</i> | <i>Design scenario</i> |
|--------------------------------|--|
| CP1 | BE, UT, CS, FI, UF, CF, RC, SS |
| CP2 | BE, UT, CS, SF, HS, IS, FI, CF, RC, UF, VS |
| CP3 | BE, UT, CS, SF, CF, RC |
| CP4 | IS, VS |
| CP5 | FI, SS |
| CP6 | CS |
| CP7 | FI, VS |
| CP8 | BE, UT, CS, SF, CF, RC, VS |
| CP9 | FI, UF |
| DP4 | BE, UT, CS, SF, IS, CF, RC |
| DP5 | BE, UT, CS, SF, IS, FI, CF, RC |
| DP6 | BE, CS, SF, IS, CF, RC |
| DP7 | BE, RC |
| EP1.1 | SF, IS, CF, RC |
| EP1.2 | SF, CF, RC |
| EP1.3 | SF, FI, CF, RC |
| EP1.4 | BE, UT, CS, SF, IS, CF, RC |
| EP1.6 | FI |
| EP2.1 | BE, UT, CS, SF, IS, CF, RC |
| EP2.2 | BE, UT, CS, SF, IS, FI, CF, RC, VS |
| EP3.2 | FI |
| EP4.1 | BE, UT, CS, SF, IS, CF, RC |
| EP4.2 | BE, UT, CS, SF, IS, CF, RC |
| EP4.3 | BE, UT, CS, SF, IS, CF, RC |

1.5 Fire modelling to determine ASET

For particular *design scenarios*, the designer must demonstrate that the occupants have sufficient time to evacuate the building before being overcome by the effects of fire.

In *fire safety engineering* terms, the *ASET* must be greater than the *RSET*.

ASET is defined as the time between ignition of the *design fire* and the time when the first tenability criterion is exceeded in a specified room within the building. The tenability parameters measured at a height of 2 m above floor level, are—

- (a) a *FED* of thermal effects greater than 0.3; or
- (b) conditions where, due to smoke obscuration, *visibility* is less than 10 m except in rooms of less than 100 m² or where the distance to an *exit* is 5 m or less, where *visibility* may fall to 5 m.

Explanatory information:

Visibility is generally the first tenability criterion exceeded in calculations unless any exception is applied.

Calculate the *ASET* by modelling the fire using the *design fire* as specified. In most cases there will be a number of locations for the fire that could produce the lowest *ASET* for a given escape route. Check a number of rooms to determine the limiting case.

It must be demonstrated that the proposed level of safety is at least equivalent to that provided by a building compliant with the *Deemed-to-Satisfy Provisions*.

2.1 Design scenario (BE)

Fire blocks evacuation route

Design scenario in brief

A fire starts in an *evacuation route* and can potentially block the *evacuation route*.

Required outcome

Demonstrate that the level of safety is at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.1.1 Design scenario description

This *design scenario* addresses the concern that an *evacuation route* may be blocked due to proximity of the fire source. For each room/space within the building, assume that the fire source is located near the primary *evacuation route* and that it prevents occupants from leaving the building by that route. Fire in *evacuation routes* can be the result of an accidental or deliberately lit fire.

In order to be regarded as alternative *evacuation routes*, the *evacuation routes* must be separated from each other and must remain separated until reaching a final *exit* in accordance with D1.5, or as demonstrated equivalent through analysis.

Active and passive *fire safety systems* in the building must be assumed to perform as intended by the design.

Explanatory information:

The fire safety engineer needs to consider fire source locations that prevent the use of *exits* in *evacuation routes*.

Fire characteristics (e.g. HRR) and analysis need not be considered in this *design scenario* as the fire is assumed to physically block the *evacuation route*. It may be assumed that occupant tenability criteria cannot be met where fire plumes and flames block an *evacuation route*.

2.1.2 Typical method or solution

The requirements of this *design scenario* can be demonstrated by analysis that checks whether or not a second *evacuation route* is required.

2.2 Design scenario (UT)

Fire in normally unoccupied room threatening occupants of other rooms

Design scenario in brief

A fire starts in a normally unoccupied room and can potentially endanger a large number of occupants in another room.

Required outcome

Demonstrate that the level of safety is at least equivalent to the [Deemed-to-Satisfy Provisions](#).

2.2.1 Design scenario description

This [design scenario](#) only applies to buildings with rooms or spaces that could be threatened by a fire occurring in another normally unoccupied space. Such rooms or spaces must include those rooms or spaces physically adjacent to the unoccupied room as well as rooms or spaces that are a farther distance and are not fire separated; or rooms or spaces from which occupants or slower evacuees have to pass through a potentially threatened room or space adjacent to the unoccupied room. It does not need to be satisfied for any other rooms or spaces in the building.

A fire starting in an unoccupied space can grow to a significant size undetected and then spread to other areas where people may be present or where people are young, elderly or have a disability and will take longer to evacuate. This [design scenario](#) is intended to address concern regarding fire starting in a normally unoccupied room and then migrating into space(s) potentially holding occupants.

The analysis must assume that the target space containing occupants is filled to capacity under normal use or otherwise contains occupants with longer evacuation times.

For analysis, select a [design fire](#) for the applicable occupancy. Active and passive [fire safety system](#) in the building must be assumed to perform as intended by the design.

2.2.2 Typical method or solution

Either—

- (a) carry out [ASET](#) / [RSET](#) analysis to show that the occupants within target spaces are not exposed to untenable conditions, or
- (b) include [separating elements](#) or fire suppression to confine the fire to the room of origin.

2.3 Design scenario (CS)

Fire starts in a concealed space

Design scenario in brief

A fire starts in a concealed space that can potentially endanger people in another room or in the room of fire origin.

Required outcome

Demonstrate that fire spread via concealed spaces will not endanger occupants located in other rooms / spaces; and
Demonstrate that the proposed level of safety is at least equivalent to the [Deemed-to-Satisfy Provisions](#).

2.3.1 Design scenario description

This [design scenario](#) only applies to buildings with rooms or spaces that could be threatened by a fire occurring in a concealed space. Such rooms or spaces must include those rooms or spaces physically adjacent to the concealed space as well as rooms or spaces that are a farther distance and are not fire separated; or rooms or spaces where slower evacuees have to pass through a potentially threatened room or space adjacent to the concealed space. It does not need to be satisfied for any other rooms or spaces in the building.

A fire starting in a concealed space can develop undetected and spread to endanger a large number of occupants in another room. This [design scenario](#) addresses concern that a fire originating in a non-separated concealed space without either a detection system or suppression system could spread into a room within the building potentially holding a large number of occupants.

Assume that active and passive [fire safety systems](#) in the building perform as intended by the design.

Explanatory information:

Fire spreading in concealed spaces may also compromise the ability of firefighters to assess the threat to themselves whilst undertaking rescue and firefighting operations.

2.3.2 Typical method or solution

If a calculation approach using this [Verification Method](#) is used, the expected solution will most likely be to—

- (a) use [separating elements](#) or suppression to confine fire to the concealed space, or
- (b) include [automatic](#) detection of heat or smoke to provide early warning of fire within the concealed space, or
- (c) a combination of (a) and (b).

2.4 Design scenario (SF)

Smouldering fire

Design scenario in brief

A fire is smouldering in close proximity to a sleeping area.

Required outcome

Provide a safe sleeping area.

Demonstrate that the level of safety be at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.4.1 Design scenario description

This *design scenario* addresses the concern regarding a slow, smouldering fire that causes a threat to sleeping occupants. Assume that active and passive *fire safety system* in the building perform as intended by the design.

2.4.2 Typical method or solution

The expected methodology is to either—

- (a) use *separating elements* to confine the fire to the space of origin (assuming it is a separate space from the sleeping area), or
- (b) include *automatic* detection of smoke in adjacent spaces to provide early warning of fire within an adjoining space.

The *separating elements* must prevent all smoke ingress which, for almost all situations requires a pressure differential between the two spaces in addition to a physical barrier. The pressure differential will have to be sufficient to prevent smoke ingress to the sleeping area.

If the *automatic* detection methodology is chosen, then an *automatic* smoke detection and alarm system must be installed throughout the sleeping and adjoining spaces.

2.5 Design scenario (HS)

Horizontal fire spread

Design scenario in brief

A *fully developed fire* in a building exposes the *external walls* of a neighbouring building or *fire compartment* and a *fully developed fire* in the neighbouring building exposing the opening in the *external walls* of the building.

Required outcome

Demonstrate that the risk of fire spread between buildings is not greater than buildings complying with the *Deemed-to-Satisfy Provisions*.

2.5.1 Design scenario description

This *design scenario* describes the requirements for a building to prevent horizontal fire spread to and from an adjacent building or *fire compartment*.

2.5.2 Typical method or solution

Demonstrate compliance with *CV1* and *CV2*.

2.6 Design scenario (VS)

Vertical fire spread involving external cladding or external openings

Design scenario in brief

A fire source exposes the [external wall](#) or arrangement of openings in a building and leads to significant vertical fire spread.

Required outcome

Demonstrate that the building's external cladding / facade and arrangement of openings in the building do not increase the risk to life resulting from a fire beyond that for a similar building complying with the [Deemed-to-Satisfy Provisions](#).

2.6.1 Design scenario description

This [design scenario](#) applies to all buildings where there is a risk of vertical fire spread.

Comment:

This [design scenario](#) is not concerned with building-to-building fire spread across a relevant boundary, as this is addressed in the [design scenario](#): HS (see [2.5](#)).

2.6.2 Method

Demonstrate compliance with [CV3](#).

2.7 Design scenario (IS)

Rapid fire spread involving internal surface linings

Design scenario in brief

Interior surfaces are exposed to a growing fire that potentially endangers building occupants.

Required outcome

Demonstrate that the level of safety be at least equivalent to the [Deemed-to-Satisfy Provisions](#).

2.7.1 Design scenario description

The performance criteria required for lining materials will depend on their location within a building, and the use of the building.

2.7.2 Typical method or solution

Linings, materials and assemblies in Class 2 to 9 buildings must comply with the appropriate provisions in NCC Volume One Specification C1.10 [Table 1](#) or be demonstrated to provide equivalent performance with respect to the performance criteria prescribed in the referenced test standards.

2.8 Design scenario (FI)

Fire brigade intervention

Design scenario in brief

This *design scenario* allows for *fire brigade* intervention.

Required outcome

Demonstrate that the *fire brigade* can undertake *fire brigade* intervention until completion of search and rescue activities; and

Demonstrate that the level of safety be at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.8.1 Design scenario description

The purpose of this *design scenario* is to describe—

- (a) the fire event the *fire brigade* is expected to face at its estimated time of arrival; and
- (b) the scope of available fire-fighting facilities relative to the risk to building occupant safety and adjacent buildings; and
- (c) the ability for the *fire brigade* to complete search and rescue activities relevant to the available firefighting activities; and
- (d) the ability of the *fire brigade* to control or suppress a fire.

Explanatory information:

This *design scenario* is intended to be used in conjunction with the UF *design scenario* (See 2.9). These two *design scenarios* will demonstrate that facilities for *fire brigade* intervention are appropriately incorporated.

2.8.2 Typical method or solution

This *design scenario* only applies to buildings located within 50 km road travel of a fire station.

Compliance with this *design scenario* is demonstrated via application of the Australasian Fire and Emergency Service Authorities Council's (AFAC) Fire Brigade Intervention Model and modelling the fire and smoke development, in accordance with the CF *design scenario* (2.10).

Facilities for firefighting must be provided in accordance with Table 2.8, appropriate to the fire and smoke development at the estimated time of suppression activities.

Table 2.8 Facilities for fire brigade intervention

| Facilities for fire brigade intervention | Building with sprinkler protection | Building without sprinkler protection |
|--|--|---|
| <i>Fire brigade</i> external access | Yes | Yes |
| Tenability to enable identification and access to seat of fire | Yes | Yes |
| Fire hydrants – internal required | Yes if > than 100 m to all points, and / or > 3 levels | Yes if > than 70 m to all points, and / or > 3 levels |
| Fire hydrants – external required | Yes | Yes |
| Command and control provisions | Yes if > 3 levels | Yes |
| Access to normally occupied areas for search and rescue | Yes if more than 50 persons occupy building | Yes |

2.9 Design scenario (UF)

Unexpected catastrophic failure

Design scenario in brief

The design will be suitably robust to prevent catastrophic structural failure in a fire.

Required outcome

Demonstrate that disproportionate failure does not occur for the duration of the fire event; and

Demonstrate that the level of safety be at least equivalent to the [Deemed-to-Satisfy Provisions](#).

2.9.1 Design scenario description

The fundamental principles of the UF [design scenario](#) are that the building structure and/or critical elements should not suffer unexpected disproportionate failure during a fire event. This [design scenario](#) for the prevention of unexpected catastrophic failure aligns with the principles of structural robustness.

The unexpected catastrophic failure [design scenario](#) is intended to prevent unexpected catastrophic failure of a building component as a result of a fire event.

This [design scenario](#) assessment must be undertaken in conjunction with the structural engineer, to ensure that unexpected catastrophic failure should not occur for all critical elements. Ductility of the structure must also be considered so that visual cues that act as a warning occur prior to collapse.

Comment:

This [design scenario](#) is intended to be used in conjunction with the fire brigade intervention (FI) [design scenario](#). These two [design scenarios](#) will ensure that facilities for [fire brigade](#) intervention are appropriately incorporated.

2.9.2 Typical method or solution

Compliance with this [design scenario](#) is achieved by demonstrating that the building structure and components have considered the following elements during a fire event:

- (a) Assessment of the building structure and critical components such that upon the notional removal, in isolation, due to the fire event the probability of unexpected catastrophic failure of the entire element, or a significant proportion, is unlikely to occur.
- (b) Demonstrating that if a component of the building is relied upon to carry a significant portion of the total structure, a systematic risk assessment of the building is undertaken and critical high risk components are identified. High risk components are designed to cope with the identified hazard or protective measures chosen to minimise the risk during a fire event. The proportion of the structure that triggers this analysis will have a range that the designer will have to identify and justify.

2.10 Design scenario (CF)

Challenging fire

Design scenario in brief

A fire starts in a normally occupied space and presents a challenge to the building's *fire safety systems*, threatening the safety of occupants.

Required outcome

Demonstrate that the level of safety be at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.10.1 Design scenario description

The challenging fires are intended to represent the credible worst case *design scenario* in normally occupied spaces that will challenge the fire protection features of the building.

This *design scenario* requires the use of *design fires* in various locations within the building.

The *design fires* must be characterised with a steady state fire, or a power law HRR, peak HRR and FLED. Design values for *yields* are specified for soot/smoke.

The *design fires* must be modified during an analysis (depending on the methodology used) to account for building ventilation and the effects of *automatic* fire suppression systems (if any) on the fire. The *design scenario* RC (2.11) will require the overall robustness of the design to be examined separately.

The designer must—

- (a) for each location of the challenging fire, use a single fire source to evaluate the building's protection measures; and
- (b) consider the impact on occupants who may be using escape routes external to the building as well as internal routes; and
- (c) assume that active and passive *fire safety systems* in the building will perform as intended by the design.

Explanatory information:

Both CF and SS *design scenarios* refer to credible worst case *design fires*. These may not necessarily be the same *design fire*, as they relate to different safety systems of the building.

2.10.2 Typical method or solution

This *design scenario* requires the *ASET* / *RSET* analysis of the impact on all building occupants with *design fires* located in various locations within the building, except for those rooms or spaces excluded in the *design scenario* described above.

The designer must calculate the fire environment in the *evacuation routes* over the period of time the occupants require to escape. Assess the fire environment based on the *FED* and *visibility* at the location of the occupants.

The designer must select a fire calculation model appropriate to the complexity and size of the building/space that allows the *FED* and *visibility* to be determined.

2.11 Design scenario (RC)

Robustness check

Design scenario in brief

The fire design will be checked to ensure that the failure of a critical part of the *fire safety system* will not result in the design not meeting the *Performance Requirements*.

Required outcome

Demonstrate that if a single *fire safety system* fails, the design is sufficiently robust that disproportionate spread of the fire does not occur (e.g. *ASET* / *RSET* for the remaining floors or *fire compartments* is satisfied); and

Demonstrate that the level of safety be at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.11.1 Design scenario description

This *design scenario* applies where failure of a key *fire safety system* could expose occupants to untenable conditions. The key fire safety systems must be agreed as part of the *PBDB*.

Comment:

The key fire safety systems to be considered must be agreed as part of the *PBDB*.

This particular *design scenario* focuses on the *ASET* / *RSET* life safety calculations performed as part of the *design scenario* CF challenging fire (2.10).

The robustness of the design must be tested by considering the *design fire* with each key *fire safety system* rendered ineffective in turn.

Where the probability of failure of a single system failure is low and it is impractical to provide additional redundancies it may be acceptable to accept some exposure of occupants to untenable conditions. An appropriate deemed-to-satisfy building should be used to provide a benchmark.

Explanatory information:

Ideally, a comprehensive quantitative probabilistic risk assessment would be used to assess the safety of a design. However, the risk assessment tools and supporting data have not been included in this *Verification Method*. The framework currently permits a simple deterministic *ASET* / *RSET* approach with additional checks and balances.

As a general rule, when calculating *ASET* times, *fire safety systems* may be assumed to operate as designed, provided they are manufactured and installed in accordance with recognised national or international standards. However, in the situations designed above, additional *fire safety systems* provide the redundancy and robustness to fire safety designs.

2.11.2 Typical method or solution

In the circumstances described in the *design scenario*, assume the failure of each key *fire safety system* in turn as determined by the *PBDB*. If *ASET* cannot be shown to be greater than *RSET* for the building, apart from the room of fire origin, then the design must be altered until the requirements for *ASET* and *RSET* are achieved.

2.12 Design scenario (SS)

Structural stability and other property

Design scenario in brief

The fire design is used to demonstrate that the structural response of a building in a credible worst case *design scenario* does not present an unacceptable risk to *other property*.

Required outcome

Demonstrate that the building does not present an unacceptable risk to *other property* due to collapse or barrier failure resulting from a fire; and

Demonstrate that the level of safety be at least equivalent to the *Deemed-to-Satisfy Provisions*.

2.12.1 Design scenario description

Comment:

A fundamental requirement of CP1 and CP2 is that a building should not present a risk to *other property* in a fire event. The purpose of this *design scenario* is to demonstrate that a building does not present a risk to *other property* during a fire event that has the potential to impact on the building's structure.

Unlike the CF *design scenario*, the worst credible case fire for this *design scenario* must be located within any space of the building rather than only within an occupied space. It is likely that several different fire design locations will be required to be tested to determine the location of the worst credible case fire.

The designer must—

- (a) for each location of the *design fire*, use a single fire source to evaluate the building's protection measures; and
- (b) consider the impact on occupants who may be using *evacuation routes* external to the building as well as internal routes.

Explanatory information:

Both CF and SS *design scenarios* refer to credible worst case *design fires*. These may not necessarily be the same *design fire*, as they relate to different safety systems of the building.

2.12.2 Typical method or solution

The impact of a fully developed fire in the worst-case location on the structural stability of a building must be assessed.

Simultaneous and individual failures of active fire suppression systems (if provided), delayed *fire brigade* intervention and premature failure of structural fire protection should be considered and probabilities assigned to the occurrence of each of the events and the outcomes predicted.

If a simplistic approach is adopted the outcomes and probabilities of each combination of outcomes should be predicted and compared with a deemed-to-satisfy benchmark building.

Explanatory information:

Typically the fire safety engineer, with the assistance of a structural engineer, would demonstrate that appropriate features have been incorporated into the building which either—

- (a) ensure the risk of collapse is equivalent or less than a similar deemed-to-satisfy structure; and
- (b) there is no increased risk from outward structural collapse compared to a similar deemed-to-satisfy structure; and
- (c) the risk to life for the subject building is no greater than that for a similar deemed-to-satisfy structure.

History of PCA Adoption

History of adoption

Preview

History of PCA Adoption

History of adoption

- 1.0 Adoption of PCA 2011
- 2.0 Adoption of PCA 2012
- 3.0 Adoption of PCA 2013
- 4.0 Adoption of PCA 2014
- 5.0 Adoption of PCA 2015
- 6.0 Adoption of PCA 2016
- 7.0 Adoption of PCA 2019

Preview

History of adoption

1.0 Adoption of PCA 2011

The 2011 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 1.0](#).

Table 1.0 History of adoption of PCA 2011

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2011 |
| Australian Capital Territory | 1 May 2011 |
| New South Wales | Not adopted |
| Northern Territory | Not adopted |
| Queensland | 5 May 2011 |
| South Australia | 11 July 2011 |
| Tasmania | 1 May 2011 |
| Victoria | 1 May 2011 |
| Western Australia | Not adopted |

2.0 Adoption of PCA 2012

The 2012 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 2.0](#).

Table 2.0 History of adoption of PCA 2012

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2012 |
| Australian Capital Territory | Not adopted |
| New South Wales | 1 July 2012 |
| Northern Territory | 3 August 2012 |
| Queensland | 1 May 2012 |
| South Australia | 1 May 2012 |
| Tasmania | 1 May 2012 |
| Victoria | 1 May 2012 |
| Western Australia | Not adopted |

3.0 Adoption of PCA 2013

The 2013 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 3.0](#).

Table 3.0 History of adoption of PCA 2013

| Administration | Adoption Date |
|------------------------------|------------------|
| Australian Government | 1 May 2013 |
| Australian Capital Territory | 1 September 2013 |
| New South Wales | 1 May 2013 |
| Northern Territory | 1 May 2013 |
| Queensland | 1 May 2013 |
| South Australia | 1 May 2013 |
| Tasmania | 1 May 2013 |
| Victoria | 1 May 2013 |
| Western Australia | Not adopted |

History of PCA Adoption

4.0 Adoption of PCA 2014

The 2014 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 4.0](#).

Table 4.0 History of adoption of PCA 2014

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2014 |
| Australian Capital Territory | 1 May 2014 |
| New South Wales | 1 May 2014 |
| Northern Territory | 1 May 2014 |
| Queensland | 1 May 2014 |
| South Australia | 1 May 2014 |
| Tasmania | 1 May 2014 |
| Victoria | 1 May 2014 |
| Western Australia | Not adopted |

5.0 Adoption of PCA 2015

The 2015 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 5.0](#).

Table 5.0 History of adoption of PCA 2015

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2015 |
| Australian Capital Territory | 1 May 2015 |
| New South Wales | 1 May 2015 |
| Northern Territory | 1 May 2015 |
| Queensland | 1 May 2015 |
| South Australia | 1 May 2015 |
| Tasmania | 1 May 2015 |
| Victoria | 1 May 2015 |
| Western Australia | 1 May 2015 |

6.0 Adoption of PCA 2016

The 2016 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 6.0](#).

Table 6.0 History of adoption of PCA 2016

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2016 |
| Australian Capital Territory | 1 May 2016 |
| New South Wales | 1 May 2016 |
| Northern Territory | 1 May 2016 |
| Queensland | 1 May 2016 |
| South Australia | 1 May 2016 |
| Tasmania | 1 May 2016 |
| Victoria | 1 May 2016 |
| Western Australia | 1 May 2016 |

7.0 Adoption of PCA 2019

The 2019 edition of the PCA was adopted by the Commonwealth, States and Territories as set out in [Table 7.0](#).

History of PCA Adoption

Table 7.0 History of adoption of PCA 2019

| Administration | Adoption Date |
|------------------------------|---------------|
| Australian Government | 1 May 2019 |
| Australian Capital Territory | 1 May 2019 |
| New South Wales | 1 May 2019 |
| Northern Territory | 1 May 2019 |
| Queensland | 1 May 2019 |
| South Australia | 1 May 2019 |
| Tasmania | 1 May 2019 |
| Victoria | 1 May 2019 |
| Western Australia | 1 May 2019 |

Preview

List of Amendments

List of Amendments - NCC 2019 - Volume Three

Preview

List of Amendments

List of Amendments - NCC 2019 - Volume Three

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List of Amendments - NCC 2019 - Volume Three

This set of notes has been prepared by the Australian Building Codes Board to assist NCC users in identifying changes incorporated in the 2019 edition of Volume Three of the NCC.

The notes provide a description of major technical changes made from the previous edition of Volume Three.

While the Australian Building Codes Board has attempted to include all major changes made from the previous edition of Volume Three, the Board does not give any warranty nor accept any liability in relation to the contents of this list of amendments.

General

| Reference | Changes and Commentary |
|------------|--|
| Throughout | The content and layout of Volume Three has been revised as part of the initiative to improve the readability of the NCC. |
| Throughout | The structure of tables has been revised to improve accessibility in accordance with obligations of the Web Content Accessibility Guidelines (WCAG). |
| Throughout | References to AS/NZS 3500.5, which has been withdrawn, have been removed. |

Introduction to the NCC

| Reference | Changes and Commentary |
|-------------------------|---|
| Introduction to the NCC | The introduction to the NCC has been revised as a part of the initiative to improve the readability of the NCC. |

Section A - Governing Requirements

| Reference | Changes and Commentary |
|-----------|---|
| Section A | The General Provisions have been replaced with Section A, the Governing Requirements of the NCC, as part of the initiative to improve the readability of the NCC. |
| Part A5 | The content relating to materials and products, previously covered in each Part, has been consolidated into Part A5 to avoid duplication. |

Part B1 - Cold water services

| Reference | Changes and Commentary |
|--|---|
| Performance Requirements | The Performance Requirement relating to the contamination of drinking water, previously located in BP1.2, has been relocated to Part B5 Cross-connection control and operates in addition to Part B1. |
| Performance Requirements | The Performance Requirement relating to "undue noise", previously located in BP1.2, has been relocated to Part D1 Excessive noise and operates in addition to Part B1. |
| Performance Requirements | The Performance Requirement relating to people with disability, previously located in BP1.3, has been relocated to Part E1 Facilities and operates in addition to Part B1. |
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in BP1.4, has been deleted, removing duplicate requirements now covered by Part A5. |
| Verification Methods | The Verification Method, previously located in BV1, has been deleted, removing duplicate assessment methods now covered by Part A2. |
| Deemed-to-Satisfy Provisions | The Deemed-to-Satisfy Provision relating to accessible fixtures and fittings, previously located in B1.3, has been relocated to Part E1 Facilities and operates in addition to Part B1. |
| Deemed-to-Satisfy Provisions | The Deemed-to-Satisfy Provision relating to cross-connection control, previously located in B1.4, has been relocated to Part B5 Cross-connection control and operates in addition to Part B1. |
| Explanatory information: Cross-volume considerations | Amended to reflect changes to NCC Volume Two. |

List of Amendments

Part B2 - Heated water services

| Reference | Changes and Commentary |
|--|---|
| Performance Requirements | The Performance Requirement relating to contamination of drinking water, previously located in BP2.3, has been relocated to Part B5 Cross-connection control and operates in addition to Part B2. |
| Performance Requirements | The Performance Requirement relating to “undue noise”, previously located in BP2.3, has been relocated to Part D1 Excessive noise and operates in addition to Part B2. |
| Performance Requirements | The Performance Requirement relating to people with disability, previously located in BP2.6, has been relocated to Part E1 Facilities and operates in addition to Part B2. |
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in BP2.7, has been deleted, removing duplicate requirements now covered by Part A5. |
| Verification Methods | The Verification Method, previously located in BV2.1, has been deleted, removing duplicate assessment methods now covered by Part A2. |
| BV2.2 | A new Verification Method, BV2.2, has been inserted as a means to verify compliance with BP2.5. |
| Deemed-to-Satisfy Provisions | The Deemed-to-Satisfy Provision relating to accessible fixtures and fittings, previously located in B2.3, has been relocated to Part E1 Facilities and operates in addition to Part B2. |
| B2.5 | A new Deemed-to-Satisfy Provision has been inserted for maximum heated water delivery temperatures to sanitary fixtures, to alleviate a potential conflict within the referenced documents. |
| B2.6 | A new Deemed-to-Satisfy Provision has been inserted for temperature control devices to provide additional methods to achieve heated water delivery at 45°C and 50°C. |
| B2.7 | A partially prescriptive provision, previously located in BP2.4, has been amended and relocated to the Deemed-to-Satisfy Provisions. |
| B2.8 | A new provision has been inserted covering legionella control for water heaters. |
| Explanatory information: Cross-volume considerations | Amended to include pool and spa heating and pumping – energy efficiency requirements in Part J7 of NCC Volume One and Part 3.12.5 of NCC Volume Two. |

Part B3 - Non-drinking water services

| Reference | Changes and Commentary |
|--|---|
| BP3.1 | Amended to remove reference to the Deemed-to-Satisfy Provision, previously located in B3.3 and to harmonise compliance with the NCC. |
| Performance Requirements | The Performance Requirement relating to contamination of drinking water, previously located in BP3.3, has been relocated to Part B5 Cross-connection control and operates in addition to Part B3. |
| Performance Requirements | The Performance Requirement relating to “undue noise”, previously located in BP3.3, has been relocated to Part D1 Excessive noise and operates in addition to Part B3. |
| Performance Requirements | The Performance Requirement relating to people with disability, previously located in BP3.4, has been relocated to Part E1 Facilities and operates in addition to Part B3. |
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in BP3.5, has been deleted, removing duplicate requirements now covered by Part A5. |
| Verification Methods | The Verification Method, previously located in BV2.1, has been deleted, removing duplicate assessment methods now covered by Part A2. |
| B3.2 | The Deemed-to-Satisfy Provision, previously located in B3.3 has been amended to clarify where a non-drinking water service must not be connected. |
| Explanatory information: Cross-volume considerations | The cross-volume explanatory information has been amended to reflect changes to NCC Volume Two. |

Part B4 - Fire-fighting water services

| Reference | Changes and Commentary |
|--------------------------|---|
| Performance Requirements | The Performance Requirement relating to contamination of drinking water, previously located in BP4.1, has been relocated to Part B5 Cross-connection control and operates in addition to Part B4. |

List of Amendments

| Reference | Changes and Commentary |
|------------------------------|--|
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in BP4.2, has been deleted, removing duplicate requirements now covered by Part A5. |
| Verification Methods | The Verification Method, previously located in BV4, has been deleted, removing duplicate assessment methods now covered by Part A2. |
| Deemed-to-Satisfy Provisions | The Deemed-to-Satisfy Provisions referencing Australian Standards, with the exception of AS/NZS 3500.1, previously located in B4.2, have been deleted, harmonising the requirements relating to fire suppression systems within the NCC. |
| B4.2 | New referenced documents, FPAA101H and FPAA101D, for the installation of a fire-fighting water service, have been inserted. |

Part B5 - Cross-connection control

| Reference | Changes and Commentary |
|-----------|---|
| Part B5 | A new Part, including a new Specification B5.1, has been inserted to consolidate the provisions relating to cross-connection control and operates in addition to Parts B1, B2, B3, B4 and B6. |

Part B6 - Rainwater harvesting and use

| Reference | Changes and Commentary |
|-----------|--|
| Part B6 | A new Part has been inserted to consolidate the provisions relating to rainwater harvesting and use and operates in addition to Parts B1, B2, B3 and B4. |

Part C1 - Sanitary plumbing systems

| Reference | Changes and Commentary |
|------------------------------|---|
| Performance Requirements | The Performance Requirement relating to undue noise, previously located in BP3.3, has been relocated to Part D1 Excessive noise and operates in addition to Part C1. |
| Performance Requirements | The Performance Requirement relating to people with disability, previously located in BP3.4, has been relocated to Part E1 Facilities and operates in addition to Part C1. |
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in BP3.5, has been deleted, removing duplicate requirements now covered by Part A5. |
| C1.2 | A new provision has been inserted to satisfy the Performance Requirement CP1.1(2)(b) and harmonise the requirements of AS/NZS 3500.2 in a sanitary plumbing and sanitary drainage system. |
| Deemed-to-Satisfy Provisions | The Deemed-to-Satisfy Provisions previously located in C1.3, relating to accessible fixtures and fittings, have been relocated to Part E1 Facilities and operate in addition to Part C1. |

Part C2 - Sanitary drainage systems

| Reference | Changes and Commentary |
|--------------------------|---|
| Explanatory information | Amended to include swimming pools and harmonise the Objectives and Functional Statements within the NCC. |
| Performance Requirements | The Performance Requirement relating to materials and products, previously located in CP2.3, has been deleted, removing duplicate requirements now covered by Part A5. |
| CP2.2 | A new provision relating to discharge from a swimming pool has been inserted to harmonise the provisions within the NCC. |
| Verification Methods | The Verification Method, previously located in CV2, has been deleted, removing duplicate assessment methods now covered by Part A2. |
| CV2.1, CV2.2 | New Verification Methods have been inserted as a means to verify compliance of a sanitary drainage system. |
| C2.2 | A new provision has been inserted to satisfy the Performance Requirement CP2.1(2)(c) and harmonise the requirements of AS/NZS 3500.2 in a sanitary plumbing and sanitary drainage system. |
| C2.3 | A new provision relating to discharge from a swimming pool has been inserted to satisfy Performance Requirement CP2.2 and harmonise the provisions within the NCC. |

List of Amendments

Part D1 - Excessive noise

| Reference | Changes and Commentary |
|-----------|--|
| NA | Part D1—Roof drainage systems, that existed in PCA 2016, has been removed from the national provisions and inserted in the relevant State and Territory appendices. |
| Part D1 | A new Part has been inserted to consolidate and harmonise provisions, throughout the NCC, relating to noise within a plumbing or drainage system and operate in addition to Parts B1, B2, B3, B4, B5, B6, C1 and C2. |

Part D2 - (previously) Surface and subsurface drainage systems

| Reference | Changes and Commentary |
|-----------|---|
| NA | Part D2—Surface and subsurface drainage systems, that existed in PCA 2016, has been removed from the national provisions and inserted in the relevant State and Territory appendices. |

Part E1 - Facilities

| Reference | Changes and Commentary |
|-----------|---|
| NA | Part E1 - Heating, ventilation and air-conditioning systems, that existed in PCA 2016, has been removed from the national provisions and inserted in the relevant State and Territory appendices. |
| Part E1 | A new Part has been inserted to consolidate provisions relating to a plumbing system for people with disability and operates in addition to Parts B1, B2, B3, B4, B5, B6, C1 and C2. |

Part F1 - (previously) On-site wastewater management systems

| Reference | Changes and Commentary |
|-----------|---|
| NA | Part F1 - On-site wastewater management systems, that existed in PCA 2016, has been removed from the national provisions and inserted in the relevant State and Territory appendices. |

Part F2 - (previously) On-site liquid trade waste systems

| Reference | Changes and Commentary |
|-----------|--|
| NA | Part F2 - On-site liquid trade waste systems, that existed in PCA 2016, has been removed from the national provisions and inserted in the relevant State and Territory appendices. |

Schedule 2 - Abbreviations and symbols

| Reference | Changes and Commentary |
|------------|---|
| Schedule 2 | Abbreviations and symbols used in the PCA have been included in Schedule 2 as a part of the initiative to improve the readability of the NCC. |

Schedule 3 - Definitions

| Reference | Changes and Commentary |
|----------------------------|--|
| Schedule 3 | The definitions, previously contained in Part A1, have been relocated to Schedule 3 as part of the initiative to improve the readability of the NCC. Schedule 3 includes all defined terms used throughout all volumes of the NCC. |
| Aged care building | A defined term has been adopted from the harmonised defined terms, to identify the assisted living conditions in a Class 9c building for heated water provisions in Part B2. |
| Backflow prevention device | A new defined term has been inserted to identify the devices and design requirements that prevent the unplanned reversal of fluid, for cross-connection control provisions in Part B5. |
| Blockage | A new defined term has been inserted to outline a situation that affects a sanitary drainage system, for sanitary drainage provisions in Part C2. |
| Boiler | A new defined term has been inserted to assign a level of risk to a known risk source, for cross-connection control provisions in Part B5. |
| Containment protection | A new defined term has been inserted to identify the level of protection required for cross- |

List of Amendments

| Reference | Changes and Commentary |
|-----------------------------|---|
| | connection control provisions in Part B5. |
| Contaminant | A new defined term has been inserted to identify the likely causes of change to water conditions, for cross-connection control provisions in Part B5. |
| Cross-connection | A new defined term has been inserted to identify how the likely causes of change to water conditions occur, for cross-connection control provisions in Part B5. |
| Hazard rating | A new defined term has been inserted to assign a risk score for cross-connection control provisions in Part B5. |
| High hazard | A new defined term has been inserted to assign a level of risk for cross-connection control provisions in Part B5. |
| Individual protection | A new defined term has been inserted to identify the level of protection required for cross-connection control provisions in Part B5. |
| Medium hazard | A new defined term has been inserted to assign a level of risk for cross-connection control provisions in Part B5. |
| Rainwater harvesting system | A new defined term has been inserted to identify the system boundary of a rainwater harvesting system. |
| Separating wall | A defined term has been adopted from the harmonised defined terms, to provide clarity in applying excessive noise provisions in adjoining Class 1 buildings. |
| Site | A defined term has been adopted from the harmonised defined terms, to group plumbing and drainage systems within a specified boundary. |
| Sole-occupancy unit | A defined term has been adopted from the harmonised defined terms, to set out the applicable conditions required for excessive noise provisions in Part D1. |
| Swimming pool | A defined term has been adopted from the harmonised defined terms, to provide clarity to the introduced provisions relating to swimming pool drainage in Part C2. |
| Uncontrolled discharge | A new defined term has been inserted to cover any unintentional release of fluid from a plumbing or drainage system. |
| Zone protection | A new defined term has been inserted to identify the level of protection required for the cross-connection control provisions in Part B5. |

Schedule 4 - Documents adopted by reference

| Reference | Changes and Commentary |
|---------------|---|
| AS/NZS 1200 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 1271 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 1324.1 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 1345 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 1358 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 1428.1 | Amendment 2 to the 2009 edition of AS/NZS 1428.1—Design for access and mobility - General requirements for access – New building work, has been referenced. |
| AS/NZS 1546.1 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 1546.2 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 1546.3 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 1547 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 1571 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 1668.1 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |

List of Amendments

| Reference | Changes and Commentary |
|---------------|--|
| AS 1668.2 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 2118.1 | Deleted from Schedule because this standard is no longer referenced within Volume Three. |
| AS/NZS 3500.1 | The 2018 edition of AS/NZS 3500.1—Plumbing and Drainage - Water services, has been referenced. |
| AS/NZS 3500.2 | The 2018 edition of AS/NZS 3500.2—Plumbing and Drainage - Sanitary plumbing and drainage, has been referenced. |
| AS/NZS 3500.3 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 3500.4 | The 2018 edition of AS/NZS 3500.4—Plumbing and Drainage - Heated water services (incorporating amendment 1) has been referenced. |
| AS/NZS 3500.5 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 3666.1 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 3666.2 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS/NZS 4020 | The 2018 edition of AS/NZS 4020—Testing of products for use in contact with drinking water, has been referenced. |
| AS 4041 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 4254.1 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 4254.2 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 4426 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 4508 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| AS 5601 | Deleted from Schedule because this standard is no longer referenced within the national provisions. |
| FPAA101D | The 2018 edition of FPAA101D Automatic Fire Sprinkler System Design and Installation—Drinking Water Supply has been referenced. |
| FPAA101D | The 2018 edition of FPAA101H Automatic Fire Sprinkler System Design and Installation—Hydrant Water Supply has been referenced. |