Ministerial Building Standard MBS 013

Application of NCC modern homes provisions to existing Class 1 buildings

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SECTION A – ADMINISTRATIVE REQUIREMENTS

Part 13A1 Interpreting MBS 013

13A1A1 Scope

This Standard is published as a Ministerial Building Standard (MBS) that forms part of the *Building Rules* under Section 80 of the *Planning, Development and Infrastructure Act 2016* and must be read in conjunction with the requirements of that Act and the *Planning, Development and Infrastructure (General) Regulations 2017.*

MBS 013 contains alternate building rules for *alterations* and *additions* to existing Class 1 dwellings to support compliance with the requirements of the National Construction Code (NCC) modern homes provisions where compliance is problematic due to the disparity between new and existing standards of construction.

This MBS provides specific requirements for Energy Efficiency and Liveable Housing Design when it is proposed to undertake *alterations* and *additions* to existing Class 1 dwellings.

13A1A2 Structure

MBS 013 has adopted a clause numbering system similar to the system used in NCC 2022.

The first number indicates the MBS reference number [MBS 013], the first letter [A/B/C] indicates the Section and the second letter indicates the Clause Type [A/P/V/D].

Section		Clause Type	
A	Administrative Requirements	A	Administrative Requirement (mandatory)
B	Energy Efficiency Requirements	P	Performance Requirement (mandatory)
C	Livable Housing Requirements	V	Verification Method (optional)
		D	Deemed-to-Satisfy Provision (optional)

The Administrative Requirements provide rules and instructions for using and complying with MBS 013 to support the correct application of the technical requirements.

Specifications have the first letter [S] and second letter [C] for Clause. The second number indicates the number of the sequentially numbered Specification Part.

Informative parts are not numbered and do not have numbered paragraphs.

13A1A3 Interpretation

MBS 013 must be interpreted and applied in accordance with the following:

(1) A Class 1 building is a dwelling. A reference to a dwelling or Class 1 building is a reference to an entire dwelling or part of a dwelling (as the case requires).

(2) A reference to Class 1 is a reference to all sub-classifications of that class. Class 1a and Class 1b are sub-classifications of Class 1.

(3) A reference to a sub-classification is solely to that sub-classification.

(4) A “Note” is part of a provision or requirement and provides additional mandatory instructions.

(5) Figures in MBS 013 illustrate specific issues referenced in the associated text and must not be construed as containing all design information required for that building element or situation.

(6) Definitions, symbols and abbreviations are listed in Schedule 1.

(7) Words in italics must be interpreted in accordance with definitions provided in Schedule 1, unless the contrary intention appears.

Explanatory Information

Introduction and Explanatory information contained in MBS 013 is non-mandatory and provided for guidance purposes only. It should be read in conjunction with the technical provisions of the MBS. Any informative statements within MBS 013 should not be taken to override the MBS.

Defined words provide the precise meaning and expressions of key words used for understanding and complying with MBS 013. Where a word is not defined in MBS 013, the relevant common meaning of the word should be used.

A reference to an *addition* to a dwelling is a reference to the additional area beyond the boundary formed by the external walls of the existing dwelling. A reference to an *alteration* is a reference to building work proposed to repair, remodel, and alter the existing dwelling within the boundary formed by its external walls. A reference to an *addition & alteration* is a reference to an addition that extends into the existing dwelling.

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

Figures are used to explain the requirements of a particular clause. A figure must not be used as an indication of the full construction requirements in each situation, as the only available option, or a substitute for referencing appropriate construction requirements (in other sources) for a given clause.

Part 13A2 Compliance with MBS 013

13A2A1 Compliance

Compliance with MBS 013 and the NCC is achieved by complying with the *Performance Requirements*, which are satisfied by one of the following:

(1) *Performance Solution*.

(2) *Deemed-to-Satisfy Solution*.

(3) A combination of (1) and (2).

13A2A2 Performance Solution

(1) A *Performance Solution* is achieved by demonstrating compliance with all *relevant Performance Requirements*; or 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 of the NCC that shows the use of a material, product, form of construction or design meets the relevant *Performance Requirements*.

(b) A *Verification Method* provided in MBS 013 that show compliance with the relevant *Performance Requirements*.

(c) Expert Judgement.

(d) Comparison with the *Deemed-to-Satisfy Provisions*.

(3) The methods and steps used to determine the *Performance Requirements* relevant to the *Performance Solution* must be in accordance with NCC 2022: A2G2.

13A2A3 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 of the NCC that shows the use of a material, product, and a form of construction or design meets a Deemed-to-Satisfy Provision.

(b) Expert Judgement.

13A2A4 Combination of solutions

Performance Requirements may be satisfied by using a combination of *Performance Solutions* and *Deemed-to-Satisfy Solutions* in accordance with NCC 2022: A2G4.

Part 13A3 Referenced documents

13A3A1 Referenced documents

(1) A reference in MBS 013 to a document refers to the edition or issues and any amendment listed in Schedule 2.

(2) A document referenced in MBS 013 is only applicable in the context in which the document is quoted.

(3) Where a new edition, issue or amendment of a primary referenced document is not listed in Schedule 2, the new edition, issue or amendment is not referenced for the purpose of MBS 013.

(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.

(6) Unless otherwise stated, a reference to the *Building Code* or an Australian Standard in this MBS is a reference to the edition current at the time of application.

Part 13A4 Documentation of design and construction

13A4A1 Evidence of suitability

(1) 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 set out in NCC 2022: A5G3 (1).

(2) Evidence to support that a calculation method complies with an ABCB protocol may be in the form set out in NCC 2022: A5G3 (2).

13A4A2 NatHERS

Where house energy rating software is required to be used, evidence of the house energy rating software output must be in the form of a NatHERS certificate issued in accordance with the NatHERS scheme.

SECTION B – ENERGY EFFICIENCY

Part 13B1 Energy Efficiency Performance Requirements

Introduction

The NCC 2022 7-star energy efficiency provisions for whole-of-home energy usage are applied to a whole house and may not be suitable for application to an *addition*. The specific heating and cooling loads may not be achievable for an existing dwelling where the building fabric is not being altered and is compliant with energy efficiency standards lower than 7-star.

This MBS contains provisions that are considered reasonable for application of the energy efficiency requirements to an existing dwelling in South Australia. The requirements of this MBS are additional to those required by the *Building Code* and do not preclude absolute compliance by the building owner with the NCC 2022 Energy Efficiency provisions.

To address this anomaly, minimum acceptable performance standards that an existing dwelling must meet under the *Act* and *Regulations* when it is undergoing an assessment against the building rules by a *relevant authority* are herein defined. In addition, guidance is provided on acceptable practices that can be used to meet these performance standards.

13B1P1 Thermal Performance

For an *addition* or *addition & alteration* to an existing dwelling, the total heating, cooling and thermal energy load of the *habitable rooms* and *conditioned spaces* must not exceed the heating, cooling and thermal energy load limits demonstrated by MBS 013: 13B3D1 and MBS 013: 13B3D2.

13B1P2 Energy Usage

The *energy value* of new *domestic services* incorporated in an existing dwelling that are to serve the whole dwelling, including the *alteration* or *addition* or *addition & alteration* and the unaltered part, must not exceed the heating and cooling load limits as demonstrated by NCC 2022: H6P2 (Energy usage).

Part 13B2 Energy Efficiency Verification Methods

13B2V1 Verification using a reference building

Verification using a referenced building is not applicable to an existing dwelling that is either an *addition* or *alteration* or *addition & alteration*.

13B2V2 Verification of building envelope sealing

Verification of building envelope sealing is not applicable to an existing dwelling that is either an *addition* or *alteration* or *addition & alteration*.

Part 13B3 Energy Efficiency Deemed-to-Satisfy

13B3D1 Deemed-to-Satisfy Provisions

(1) Where a *Deemed-to-Satisfy Solution* is proposed, *Performance Requirements* MBS 013: 13B1P1 and 13B1P2 are satisfied by complying with MBS 013: 13B3D2.

(2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with MBS 013: 13A2A2 and 13A2A4 as applicable.

13B3D2 Application

(1) *Performance Requirement* MBS 013: 13B1P1 for thermal performance is satisfied for:

- (a) *repairs* or *minor alterations* by complying with MBS 013: Section B (Energy Efficiency).
- (b) an *addition* or the addition part of an *addition & alteration* that increases the floor area of the habitable rooms (measured to the inside face of the external walls) of an existing dwelling by up to and including 50%, by:
  - (i) complying with NCC 2022: Part 13 (Energy Efficiency)
  - (ii) MBS 013: Section B (Energy Efficiency), or
  - (iii) using NatHERS certified house energy rating software in compliance with MBS 013: Specification 01, and all of the following deemed-to-satisfy provisions:
    - (A) MBS 013: 1.2.2 (Building fabric thermal insulation – materials and installation).
    - (B) MBS 013: 1.2.3(5) (Roofs and ceilings), MBS 013: 1.2.5(3) (External walls), and MBS 013: 1.2.6(5) (Floors and suspended floors) for thermal breaks.
    - (C) MBS 013: 1.2.3(6) (Roofs and ceilings), for compensating for a loss of ceiling insulation, other than where the house energy rating software has compensated for a loss of ceiling insulation.
    - (D) MBS 013: 1.2.6(1) (Floors and suspended floors) for floor edge insulation.
    - (E) MBS 013: Part 1.4 (Building sealing) for building sealing.
- (c) an *addition* or the addition part of an *addition & alteration* that increases the floor area of the habitable rooms (measured to the inside face of the external walls) of an existing dwelling by more than 50%, by:

(i) complying with NCC 2022: Part 13 (Energy Efficiency), or

(ii) MBS 013: Section B (Energy Efficiency).

Explanatory Information

Refer Appendix A for information on the calculation of the floor area increase.

(2) *Performance Requirement* MBS 013: 13B1P2 (Energy usage) for the energy usage of:

(a) *repairs* or *minor alterations* is not applicable.

(b) an *alteration*, *addition* or *addition & alteration* is applicable when all domestic services are being replaced, and is satisfied by:

(i) complying with MBS 013: Part 1.5 (Whole-of-home energy usage); and MBS 013: Part 1.6 (Services), or

(ii) complying with Parts 13.6 and 13.7 of the ABCB Housing Provisions for a dwelling with a total floor area not greater than 500 m².

13B3D3 Energy Efficiency Provisions

Part 1.1 Scope and application

1.1.1 Scope

(1) The following Deemed-to-Satisfy Provisions for energy efficiency apply to *repairs*, *minor alterations,* an *alteration*, *addition* or *addition & alteration*:

(a) Building Fabric (see refer MBS 013: Part 1.2).

(b) External Glazing (refer MBS 013: Part 1.3).

(c) Building Sealing (refer Part MBS 013: 1.4).

(d) Whole of Home Energy Use (refer MBS 013: Part 1.5).

(e) Services (refer MBS 013: Part 1.6).

1.1.2 Application

(1) *Repairs* or *minor alterations* to an existing dwelling must not reduce its thermal performance.

(2) Where an *alteration* requires the removal and replacement of:

(a) internal wall linings of an external wall, the thermal performance of the wall must be in accordance with MBS 013: Part 1.2 (Building Fabric).

(b) roof sheet covering more than 50% of the roof area, the energy efficiency of the new roof and ceiling must be in accordance with MBS 013: Part 1.2 (Building Fabric).

(c) existing *external glazing* units, the *external glazing* must be in accordance with MBS 013: Part 1.3 (External Glazing).

(3) An *addition* that is a new *conditioned space* to an existing dwelling must be in accordance with:

(a) NCC 2022: Part H6 (Energy Efficiency), or

(b) MBS 013: Section B (Energy Efficiency) and thermally isolating the *addition* from the *existing dwelling* by

(i) installation of bulk insulation in accordance with MBS 013: Part 1.2.2 and

(ii) sealing the addition in accordance with MBS 013: Part 1.4 (Building Sealing).

(4) An *addition & alteration* that is a new *conditioned space* must be in accordance with:

(a) NCC 2022: Part H6 (Energy Efficiency), or

(b) MBS 013: Section B (Energy Efficiency) and thermally isolating the *addition & alteration* from the existing dwelling by:

(i) installing bulk insulation in accordance with MBS 013: 1.2.2

(ii) sealing the *alteration* part from the existing dwelling in accordance with MBS 013: Part 1.4 (Building Sealing), and

(iii) upgrading the thermal performance of the ceiling/roof in the altered part in accordance with MBS 013: Part 1.2 (Building Fabric).

(5) Ceiling insulation in the altered part of an existing dwelling is not required to be upgraded in accordance with MBS 013: 1.1.2(4) if access to the ceiling space is not possible without removal of the roof sheets.

Explanatory Information

The internal wall between an *addition* and the unaltered part or an *addition & alteration* and the unaltered part creates the thermal barrier between the new work and the existing dwelling which thermally isolates the new from the old.

Where the internal wall is framed construction without insulation, the thermal isolation is reduced and whilst MBS 013 does not require the removal of wall sheeting and the installation of additional insulation it should be considered in the design process to enhance the thermal performance of the new *conditioned space*.

Upgrading ceiling insulation in an existing dwelling that has a low-pitched roof with minimal ceiling space and no ceiling space access without removing roof sheets is possible with a granulated insulation material, however it is not a requirement of this MBS.

It is recommended that care be taken when adding insulation to existing ceiling spaces especially around existing light fittings as the insulation can affect the fittings cooling ability.

Part 1.2 Building fabric

1.2.1 Application

(1) *Repairs* or *minor alterations* must be in accordance with MBS 013 Part 1.2.

(2) An *alteration* to an existing dwelling that is:

(a) a part of an *addition & alteration*, or

(b) a change of use of a Class 10a garage that is attached to a single storey existing dwelling to a *habitable room* that is to be a *conditioned space*,

must be in accordance with the requirements of MBS 013: Part 1.2.

(3) An *alteration* that is within the curtilage of an existing dwelling and is not a part of an *addition & alteration*, does not require a thermal performance upgrade but must not reduce the energy performance of the existing dwelling.

(4) An *addition* or *addition & alteration* that is a *conditioned space* must be in accordance with the following Deemed-to-Satisfy Provisions for building fabric applied as directed by this MBS:

(a) Building fabric thermal installation – materials and installation (refer MBS 013: 1.2.2).

(b) Roofs and ceilings (refer MBS 013: 1.2.3).

(c) Roof lights (refer MBS 013: 1.2.4).

(d) External walls (refer MBS 013: 1.2.5).

(e) Floors and sub-floor walls (refer MBS 013: 1.2.6).

1.2.2 Building fabric thermal insulation installation

(1) Thermal insulation installation to *an alteration*, *addition* or *addition & alteration* must be in accordance with NCC 2022: 13.2.2 (Building fabric thermal insulation).

(2) Where access to the existing dwelling is restricted, compliance with NCC 2022: 13.2.2 (Building fabric thermal insulation) shall be to the extent possible without demolition of any part of the existing dwelling.

1.2.3 Roofs and ceilings

(1) *Repairs* or *minor alterations* to a ceiling over a conditioned space must not reduce the level of thermal performance of the habitable room. Existing insulation disturbed or removed by any new works must be reinstated or replaced.

(2) Roof *alterations* or roof sheet replacement that have an area greater than 50% of the existing roof must:

(a) have roof and ceiling insulation installed to the entire roof/ceiling area, that achieves a minimum *R-Value* in accordance with MBS 013: Table 1.2.3a.

(b) have reflective insulation where installed to comply with (a), that:

(i) has a surface emittance of not more than 0.05

(ii) is adjacent to a roof space of not less than 20 mm, and

(iii) is downward facing.

(3) Where existing ceiling linings are to be replaced in a *conditioned space* of an *alteration*, the new ceiling must have insulation in accordance with NCC 2022 Part 13.2 or MBS 013: 1.2.3(2)(a) and (b).

(4) A framed roof and ceiling to an *addition* must have roof and ceiling insulation in accordance with NCC 2022 Part 13.2 or MBS 1.2.3(2)(a) and (b).

(5) Where roof and ceiling insulation is required by MBS 013: 1.2.3 and the roof or ceiling is steel framed and subject to thermal bridging, thermal breaks must be installed in accordance with NCC 2022: 13.2.3(3), 13.2.3(4) and 13.2.3(7).

(6) Where ceiling insulation required by MBS 013:1.2.3(2) is removed to allow required electrical clearances around downlights or ceiling fans, the required *R-value* must be adjusted to compensate for the loss of thermal insulation, in accordance with NCC 2022: Table 13.2.3w.

(7) Where the ceiling insulation required by MBS 013:1.2.3(2) has an *R-Value* greater than R-3.0 and less than or equal to R-4.5, it may be reduced to R-3.0 within 450 mm of an *external wall.*

Table 1.2.3a Pitched roof with horizontal ceiling – minimum R-Value for ceiling insulation: climate zone 4, 5 and 6.

Climate Zone	Roof Ventilation	Solar Absorptance	Reflective insulation under roof	Under roof insulation R-Value	R-Value
4	Standard	Any	Yes	Any	3.0
			No	≤ 0.5	3.5
				> 0.5	3.0
	Vented	Any	Yes	≤ 0.5	3.5
				> 0.5	3.0
			No	Any	3.5
5	Standard	Any	Yes	Any	2.5
			No	≤ 0.5	3.0
				> 0.5 to < 2.0	2.5
				≥ 2.0	3.0
	Vented	Any	Yes	< 0.5	3.0
				≥ 0.5	2.5
			No	< 2.0	3.0
				≥ 2.0	2.5
6	Standard	Any	Yes	< 1.0	3.5
				≥ 1.0	3.0
			No	< 1.0	4.0
				≥ 1.0	3.5
	Vented	Any	Yes	< 1.0	3.0
				≥ 1.0	2.5
			No	< 1.0	3.0
				≥ 1.0	2.5

Table Notes

(1) A roof is vented if it:
  (a) has one wind-driven roof ventilator per 50 m2 of ceiling area, with gable, eave, or ridge vents: or
  (b) has one powered roof ventilator per 200 m2 of ceiling area, with gable, eave, or ridge vents: or
  (c) is ventilated to outdoor air through evenly distributed openings with NCC 2022 Table 10.8.3: or
  (d) is a tiled roof without sarking type material at roof level.
(2) If a roof is not 'vented', it is a 'standard' roof.
(3) The *R-Value* of reflective insulation is not to be included in the R-Value of any under-roof or ceiling insulation.
(4) *R-Values* listed are for the labelled, declared R-Value of insulation.
(5) In *climate zone* 6 roof ventilation must comply with NCC 2022 Volume Two 10.8.3.

Table 1.2.3b Flat, skillion or cathedral roof – minimum R-Value for ceiling insulation: climate zone 4, 5 and 6.

Climate Zone	Solar absorptance	Reflective insulation under roof	R-Value
4	Any	Yes	3.0
		No	3.5
5	Any	Yes	2.5
		No	3.0
6	Any	Yes	4.0
		No	4.0

Table Notes

(1) The *R-Value* can be achieved by installing insulation under the roof or on top of the ceiling or a combination of both.
(6) The *R-Value* of reflective insulation is not to be included in the *R-Value* of any under-roof or ceiling insulation.
(2) *R-Values* listed are for the labelled, declared *R-Value* of insulation.

1.2.4 Roof lights

(1) *Repairs* or *minor alterations* to roof lights servicing a *conditioned space* in an existing dwelling must not reduce the level of thermal performance of the roof light.

(2) A roof light installed as part of an *alteration*, *addition* or *addition & alteration* must be in accordance with NCC 2022: 13.2.4 (Roof lights).

1.2.5 External walls

(1) *Repairs* or *minor alterations* to the external walls of a *conditioned space* in an existing dwelling must not reduce the level of thermal performance of the *external wall* under repair and any existing insulation disturbed or removed by any new works must be reinstated or replaced.

(2) Except for the *external wall* of a sub-floor space (if applicable), the *external walls* of an *addition* or *addition & alteration* must:

(a) in climate zone 4, have wall insulation that achieves the minimum R-value in accordance with MBS 013: Table 1.2.5a and Table 1.2.5d as applicable.

(b) in climate zone 5, have wall insulation that achieves the minimum R-value in accordance with MBS 013: Table 1.2.5b and 1.2.5e as applicable.

(c) in climate zone 6, have wall insulation that achieves the minimum R-value in accordance with MBS 013: Table 1.2.5c and 1.2.5f as applicable.

(3) Where wall insulation is required by MBS 013: 1.2.5(2) and the wall framing material is steel and subject to thermal bridging, thermal breaks must be installed in accordance with NCC 2022: 13.2.5(4) and 13.2.3(5).

(4) Where the *external walls* of masonry *cavity wall* construction have added wall insulation in accordance with MBS 013: 1.2.5 (External walls), the masonry walling must remain weatherproof in accordance with NCC 2022 Part 5.7 (Weatherproofing of masonry).

(5) A Class 10a garage that is attached to a single storey existing dwelling that is to be a *conditioned space* or is to be converted to a Class 1 *habitable room* that is a *conditioned space*, must where the *external walls* are uninsulated, have *external wall* insulation installed in accordance with MBS 013: 1.2.5 (External walls).

Table 1.2.5a: Climate Zone 4 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

Solar Absorptance (S*A*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry veneer					
SINGLE STOREY					
Overhang (mm)	0	2.5	2.5	2.5	2.5
	> 0 to ≤ 300	2.0	2.5	2.0	2.5
	> 300 to ≤ 450	2.0	2.5	2.0	2.5
	> 450 to ≤ 600	2.0	2.5	2.0	2.5
	> 600 to ≤ 900	2.5	2.5	2.0	2.5
	> 900 to ≤ 1200	2.5	2.5	2.5	2.5
	> 1200 to ≤ 1500	2.7	2.7	2.7	2.5

Solar Absorptance (*SA*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry veneer					
TWO OR MORE STOREYS					
Overhang (mm)	0	2.7	2.7	2.7	2.7
	> 0 to ≤ 300	2.5	3.0	2.5	2.7
	> 300 to ≤ 450	2.5	2.7	2.5	2.7
	> 450 to ≤ 600	2.5	2.7	2.5	3.0
	> 600 to ≤ 900	2.7	2.7	2.5	3.0
	> 900 to ≤ 1200	2.7	2.7	2.7	2.7
	> 1200 to ≤ 1500	2.7	2.7	2.7	2.7
Cavity Masonry					
SINGLE STOREY					
Overhang (mm)	0	0.25	0.51	0.25	0.51
	> 0 to ≤ 300	0.25	0.51	0.25	0.51
	> 300 to ≤ 450	0.51	0.51	0.25	0.51
	> 450 to ≤ 600	0.51	0.51	0.25	0.51
	> 600 to ≤ 900	0.62	0.62	0.51	0.62
	> 900 to ≤ 1200	1.08	0.75	0.62	0.75
	> 1200 to ≤ 1500	1.44	1.08	1.08	1.08
TWO OR MORE STOREYS					
Overhang (mm)	0	0.5	0.76	0.50	0.76
	> 0 to ≤ 300	0.5	0.76	0.50	0.76
	> 300 to ≤ 450	0.76	0.76	0.50	0.76
	> 450 to ≤ 600	0.76	0.76	0.50	0.76
	> 600 to ≤ 900	0.87	0.87	0.76	0.87
	> 900 to ≤ 1200	1.33	1.0	0.87	1.0
	> 1200 to ≤ 1500	1.69	1.33	1.33	1.33

Table Notes

(1) Masonry Veneer
  (a) *R-Values* are for the labelled, declared *R-value* of the insulation.
  (b) Wall heights are for single storey construction.
  (c) Two or more storeys *R-Values* are single storey lightweight wall *R-values* with NCC R 0.5 two-storey loading.

(2) Cavity Masonry
  (a) *R-Values* are for the labelled, declared *R-value* of the insulation.
  (b) Wall heights are for single storey construction.
  (c) Two or more storeys *R-Values* are single storey cavity masonry wall *R-values* with NCC R 0.25 two storey loading.

Table 1.2.5b: Climate Zone 5 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

Solar Absorptance (*SA*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry Veneer					
SINGLE STOREY					
Overhang (mm)	0	2.0	2.0	2.0	2.0
	> 0 to ≤ 300	1.5	2.0	2.0	2.0
	> 300 to ≤ 450	1.5	2.0	1.5	2.0
	> 450 to ≤ 600	1.5	2.0	2.0	2.0
	> 600 to ≤ 900	2.0	2.0	2.0	2.0
	> 900 to ≤ 1200	2.0	2.0	2.0	2.0
	> 1200 to ≤ 1500	2.5	2.5	2.7	2.5

Solar Absorptance (S*A*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry Veneer					
TWO OR MORE STOREYS					
Overhang (mm)	0	2.5	2.5	2.5	2.5
	> 0 to ≤ 300	2.0	2.5	2.5	2.5
	> 300 to ≤ 450	2.0	2.5	2.0	2.5
	> 450 to ≤ 600	2.0	2.5	2.5	2.5
	> 600 to ≤ 900	2.5	2.5	2.5	2.5
	> 900 to ≤ 1200	2.5	2.5	2.5	2.5
	> 1200 to ≤ 1500	2.7	2.7	2.7	2.7
Cavity Masonry					
SINGLE STOREY					
Overhang (mm)	0	0.0	0.25	0.0	0.0
	> 0 to ≤ 300	0.0	0.25	0.0	0.25
	> 300 to ≤ 450	0.25	0.25	0.0	0.25
	> 450 to ≤ 600	0.25	0.25	0.25	0.25
	> 600 to ≤ 900	0.25	0.25	0.25	0.25
	> 900 to ≤ 1200	0.25	0.25	0.25	0.25
	> 1200 to ≤ 1500	0.51	0.51	0.51	0.51
TWO OR MORE STOREYS					
Overhang (mm)	0	0.25	0.5	0.25	0.25
	> 0 to ≤ 300	0.25	0.5	0.25	0.5
	> 300 to ≤ 450	0.5	0.5	0.25	0.5
	> 450 to ≤ 600	0.5	0.5	0.5	0.5
	> 600 to ≤ 900	0.5	0.5	0.5	0.5
	> 900 to ≤ 1200	0.5	0.5	0.5	0.5
	> 1200 to ≤ 1500	0.76	0.76	0.76	0.76

Table Notes

(1) Masonry Veneer
  (a) *R-Values* are for the labelled, declared *R-Value* of the insulation.
  (b) Wall heights are for single storey construction.
  (c) Two or more storeys *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

(2) Cavity Masonry
  (a) *R-Values* are for the labelled, declared *R-Value* of the insulation.
  (b) Wall heights are for single storey construction.
  (c) Two or more storeys *R-Values* are single storey cavity masonry wall *R-Values* with NCC R 0.25 two storey loading.

Table 1.2.5c: Climate Zone 6 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

Solar Absorptance (S*A*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry Veneer					
SINGLE STOREY					
Overhang (mm)	0	2.0	2.0	2.5	2.4
	> 0 to ≤ 300	2.5	2.4	2.7	2.5
	> 300 to ≤ 450	2.7	2.4	2.7	2.5
	> 450 to ≤ 600	2.7	2.7	2.7	2.7
	> 600 to ≤ 900	x	x	x	x
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x

Solar Absorptance (*SA*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
Masonry Veneer					
TWO OR MORE STOREYS					
Overhang (mm)	0	2.5	2.5	2.7	2.7
	> 0 to ≤ 300	2.7	2.7	2.7	2.7
	> 300 to ≤ 450	2.7	2.7	2.7	2.7
	> 450 to ≤ 600	2.7	2.7	2.7	2.7
	> 600 to ≤ 900	x	x	x	x
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x
Cavity Masonry					
SINGLE STOREY					
Overhang (mm)	0	0.62	0.75	0.51	0.62
	> 0 to ≤ 300	0.75	1.08	0.62	0.75
	> 300 to ≤ 450	1.08	1.08	0.75	1.08
	> 450 to ≤ 600	1.08	1.08	1.08	1.08
	> 600 to ≤ 900	1.44	1.44	1.44	1.44
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x
	> 1500 to ≤ 1800	x	x	x	x
TWO OR MORE STOREYS					
Overhang (mm)	0	1.12	1.25	1.01	1.12
	> 0 to ≤ 300	1.25	1.58	1.12	1.25
	> 300 to ≤ 450	1.58	1.58	1.25	1.58
	> 450 to ≤ 600	1.58	1.58	1.58	1.58
	> 600 to ≤ 900	1.94	1.94	1.94	1.94
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x
	> 1500 to ≤ 1800	x	x	x	x

Table Notes

(1) Masonry Veneer
- (a) *R-Values* are for the labelled, declared *R-Value* of the insulation.
- (b) Wall heights are for single storey construction.
- (c) Two or more storeys *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

(1) Cavity Masonry
- (d) *R-Values* are for the labelled, declared *R-Value* of the insulation.
- (e) Wall heights are for single storey construction.
- (f) Two or more storeys *R-Values* are single storey cavity masonry wall *R-Values* with NCC R 0.25 two storey loading.

Table 1.2.5d: Climate Zone 4 – External walls – lightweight construction – minimum R-Value of added insulation

Solar Absorptance (*SA*)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
SINGLE STOREY					
Overhang (mm)	0	2.7	2.7	2.7	2.7
	> 0 to ≤ 300	2.3	2.7	2.3	2.7
	> 300 to ≤ 450	2.3	2.7	2.3	2.7
	> 450 to ≤ 600	2.3	2.7	2.3	2.7
	> 600 to ≤ 900	2.7	2.7	2.3	2.7
	> 900 to ≤ 1200	2.7	2.7	2.7	2.7
	> 1200 to ≤ 1500	2.7	2.7	2.7	2.7

Solar Absorptance (SA)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
TWO OR MORE STOREYS					
Overhang (mm)	0	3.3	3.2	3.2	3.2
	> 0 to ≤ 300	2.5	3.2	2.7	3.2
	> 300 to ≤ 450	2.7	3.2	2.7	3.2
	> 450 to ≤ 600	2.7	3.2	2.7	3.2
	> 600 to ≤ 900	3.2	3.2	2.7	3.2
	> 900 to ≤ 1200	3.2	3.2	3.3	3.2
	> 1200 to ≤ 1500	3.8	3.8	3.8	3.2

Table Notes
(1) *R-Values* are for the labelled, declared *R-Value* of the insulation.
(2) Single storey *R-Values* are single storey masonry veneer wall *R-Values* with the R 0.3 NCC Lightweight construction loading.
(3) Two or more storeys *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

Table 1.2.5e: Climate Zone 5 – External walls – lightweight construction – minimum R- Value of added insulation

Solar Absorptance (SA)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
SINGLE STOREY					
Overhang (mm)	0	2.3	2.3	2.3	2.3
	> 0 to ≤ 300	1.8	2.3	2.3	2.3
	> 300 to ≤ 450	1.8	2.3	1.8	2.3
	> 450 to ≤ 600	1.8	2.3	2.3	2.3
	> 600 to ≤ 900	2.3	2.3	2.3	2.3
	> 900 to ≤ 1200	2.3	2.3	2.3	2.3
	> 1200 to ≤ 1500	2.7	2.7	2.7	2.7
TWO OR MORE STOREYS					
Overhang (mm)	0	2.7	2.7	2.7	2.7
	> 0 to ≤ 300	2.3	2.7	2.7	2.7
	> 300 to ≤ 450	2.3	2.7	2.3	2.7
	> 450 to ≤ 600	2.3	2.7	2.7	2.7
	> 600 to ≤ 900	2.7	2.7	2.7	2.7
	> 900 to ≤ 1200	2.7	2.7	2.7	2.7
	> 1200 to ≤ 1500	3.3	3.3	3.8	3.3

Table Notes
(1) *R-Values* are for the labelled, declared *R-Value* of the insulation.
(4) Single storey *R-Values* are single storey masonry veneer wall *R-Values* with the R 0.3 NCC Lightweight construction loading.
(5) Two or more storeys *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

Table 1.2.5f: Climate Zone 6 – External walls – lightweight construction – minimum R-Value of added insulation

Solar Absorptance (SA)		≤ 0.5		>0 .5	
Wall height (m)		≤ 2.7	> 2.7m	≤ 2.7	> 2.7m
SINGLE STOREY					
Overhang (mm)	0	2.3	2.3	2.7	2.7
	> 0 to ≤ 300	2.7	2.7	2.7	2.7
	> 300 to ≤ 450	2.7	2.7	2.7	2.7
	> 450 to ≤ 600	2.7	2.7	2.7	2.7
	> 600 to ≤ 900	x	x	x	x
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x
TWO OR MORE STOREYS					
Overhang (mm)	0	2.7	2.7	3.3	3.2
	> 0 to ≤ 300	3.2	3.2	3.3	3.3
	> 300 to ≤ 450	3.3	3.2	3.3	3.3
	> 450 to ≤ 600	3.3	3.3	3.3	3.3
	> 600 to ≤ 900	x	x	x	x
	> 900 to ≤ 1200	x	x	x	x
	> 1200 to ≤ 1500	x	x	x	x

Table Notes
(2) *R-Values* are for the labelled, declared *R-Values* of the insulation.
(6) Single storey *R-Values* are single storey masonry veneer wall *R-Values* with the R 0.3 NCC Lightweight construction loading.
(7) Two or more storeys *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

Explanatory Information

NCC 2022 has revised the added insulation tables to require consideration of the *solar absorptance* of the *external walls*, the wall height (up to a maximum of 3.6m) and the roof *overhang* (up to a maximum of 1500mm for masonry veneer walls in *climate zone* 4 and 5 and a maximum of 600mm for *climate zone* 6). There also combinations of *solar absorptance*, wall height and *overhang* width that are not permitted.

Where an *addition* to an existing dwelling is proposed, or the *external wall* is undergoing remediation or repair work, the new or repaired *external walls* will in most instances be required to be similar in wall construction to the existing wall width, wall height and *solar absorptance*. Application of the NCC 2022 provisions to an *addition* to existing dwellings in some instances will not be possible. The tables in MBS 013 for added wall insulation have been rationalised for existing dwellings.

1.2.6 Floors and suspended floors

(1) *Alterations*, *repairs* or *minor alterations* to existing floors that are:

(a) concrete slab-on-ground

(b) suspended concrete, or

(c) suspended framed

must not reduce the level of thermal performance of the existing floor and any existing insulation disturbed or removed by any new works must be reinstated or replaced.

(2) A new concrete slab-on-ground floor to an *addition* or *addition & alteration* in *climate zones* 4, 5 and 6, with or without in-screed or underfloor heating system, is not required to have added insulation either underneath or around the perimeter of the slab.

(3) A new suspended framed floor to an *addition* or *addition & alteration* that is:

(a) over an unenclosed space in *climate zone* 6, must have insulation with a minimum *R-Values* of R 4.0 or R 3.5 if used in conjunction with a reflective airspace.

(b) over an unenclosed space in *climate zones* 4 and 5, must not have added underfloor insulation.

(c) over an enclosed sub-floor space, must achieve the minimum *R-Value* required by:

(i) NCC 2022 Part 13.2.6, or

(ii) MBS 013: Table 1.2.6a.

(4) Where the existing dwelling in an *addition & alteration* has suspended floors over an unenclosed space or over a sub-floor space, the thermal performance of the existing suspended floor to the altered part is:

(a) not required to be upgraded when:

(i) the existing suspended flooring or floor framing is not being replaced.

(ii) any work to replace flooring or floor framing is less than 50% of the area of the existing suspended floor.

(b) required to be upgraded in accordance with MBS 013: 1.2.6 (Floors and suspended floors) when 50% or more of the existing suspended flooring or floor framing is being replaced.

(5) New insulation to an *addition* or *addition & alteration* installed between steel sub-floor framing is subject to thermal bridging and a thermal break must be installed in accordance NCC 2022: 13.2.6(3).

Table 1.2.6a: Climate Zone 4 – minimum R-Value of suspended floor insulation (over an enclosed space) without subfloor wall insulation

Climate Zone	Subfloor height (mm)	Reflective insulation facing down over subfloor space	Minimum subfloor wall insulation R-value	Minimum suspended floor insulation R-Value
4	≤600	Yes	0.0	1.5
	>600 to ≤900	Yes or No	0.0	1.5
	>900 to ≤1200	No	0.0	1.5
	>1200 to ≤1500	Yes or No	0.0	1.5
	>1500 to ≤1800	Yes	0.0	2.0
5	≤600	Yes	0.0	2.0
	>600 to ≤900	No	0.0	1.5
	>600 to ≤900	Yes	0.0	2.0
	>900 to ≤1200	Yes or No	0.0	2.0
	>1200 to ≤1500	Yes or No	0.0	2.0
	>1500 to ≤1800	Yes or No	0.0	2.5
6	≤600	No	0.0	2.0
	≤600	Yes	0.0	1.5
	>600 to ≤900	Yes or No	0.0	2.0
	>900 to ≤1200	No	0.0	2.0
	>900 to ≤1200	Yes	0.0	1.5
	>1200 to ≤1500	No	0.0	2.5
	>1200 to ≤1500	Yes	0.0	1.5

Climate Zone	Subfloor height (mm)	Reflective insulation facing down over subfloor space	Minimum subfloor wall insulation R-value	Minimum suspended floor insulation R-Value
	>1500 to ≤1800	No	0.0	2.5
	>1500 to ≤1800	Yes	0.0	2.0

Table Notes
(1) Suspended floor includes a suspended timber-framed floor, suspended metal-framed floor and suspended concrete floor.
(2) R-Values are for the labelled, declared R-value of the insulation.
(3) The addition of sub-floor wall insulation will reduce the required R-value of the underfloor insulation – refer NCC 022 Table 13.2.6d.

Table 1.2.6b: Metal-framed suspended floor – thermal bridging mitigation

Floor insulation (R-value) with direction of heat flow	Option 1 – increase insulation between floor framing to specified R-value	Option 2 – add a layer of continuous insulation product above or below floor framing with specified R-Value
1.5 (Down)	2.5	0.40
2.0 (Down)	3.0	0.40
2.5 (Down)	4.0	0.40

Table Notes
(1) Minimum R-values are in-situ values, and they account for compression of insulation.

Part 1.3 External glazing

1.3.1 Application

(1) Unless stated otherwise, a reference to a dwelling in this Part, includes any Class 10a part that has a *conditioned space*.

Explanatory information

Re-glazing an existing window with better performing energy efficient glass, double glazing or coating the glass with a high thermal performance continuous polymeric coating will improve the dwelling's energy efficiency.

Where the ABCB glazing calculator is to be used to determine the compliance of the external glazing and it is proposed to only upgrade the glazing (not the existing window frames) the thermal performance of similar window frame types with the proposed glazing can be used. These can be established using the Australian Windows Association (AWA), Window Energy Rating Scheme (WERS) and there is a comprehensive list of the thermal performance of glazing units on the WERS website.

Assessing the external glazing by following the elemental deemed-to-satisfy provisions of either NCC 2019 or NCC 2022 can be challenging, and it is suggested that the users of MBS 013 download the Glazing calculators from the ABCB website to simplify the calculation.

1.3.2 External glazing

(1) *Repairs* or *minor alterations* to existing *external glazing* servicing an existing *conditioned space* must not reduce the level of thermal performance of the *external glazing*.

(2) Where existing external glazing is to be replaced with new external glazing in an *alteration* or the alteration part of an *addition & alteration*,

(a) the new *external glazing* must be in accordance with MBS 013 1.3.2(3) and

(b) the *alteration* is required to be thermally isolated from the remainder of the dwelling in accordance with MBS 013: 1.1.2.

(3) An a*ddition* or the *addition* part of an *addition & alteration* to an existing dwelling must have new *external glazing* in accordance with MBS 013: 1.3.2 (External glazing) and 1.3.3 (Shading), and

(a) new *external glazing* must have a thermal performance in accordance with

(i) NCC 2019: Part 3.12.2.1, or

(ii) NCC 2022: Part 13.3.

(b) subject to the concessions allowed in MBS 013: 1.3.2 (4), 1.3.2 (5), and 1.3.2 (6), the required thermal performance of the new *external glazing* must be assessed by assessing all glazing on the respective storey, including the *addition* and any existing *external* glazing in the unaltered part of the storey, and

(c) the calculated complying thermal performance must be applied to all new *external glazing* in the storey that has the a*ddition* or *addition & alteration.*

(4) Where an *addition* or the *addition* part of an *addition & alteration* has a total floor area not more than 50 m^2 and has had bulk thermal insulation added to the ceiling of the unaltered portion of the existing dwelling in accordance with MBS 013: 1.2.3 (Roofs and ceilings), U-value concessions for *existing glazing* with internal shading devices can be applied to the *existing glazing* in the *addition* or the *addition & alteration,* in accordance with MBS 013:Table 1.3.2a

(5) Where compliance with the 'Winter Outcomes' aggregate conductance of the glazing of new external glazing is prevented by shading of existing north-facing verandahs and carports, the shading by the verandah or carport may be disregarded and the shading for the eaves only may be used.

(6) Where the north *sector* external glazing,

(a) has an area that is less than 1 m^2 or less than 1% of the floor area, whichever is the greater, or

(b) there is no north sector external glazing,

and the thermal performance cannot be met by MBS 013: 1.3.2(3), all glazing (existing and new) in the storey need not comply with the 'Winter Outcomes' aggregate conductance of the glazing.

Table 1.3.2a: External walls – Glazing Units U-value concessions with window treatments

Glazing Unit (no window treatment)		Improved U-values with window treatments				
U-Value	**R-Value**	**Holland Blinds**	**Closed weave curtains**	**Heavy drapes**	**Closed weave curtains & pelmet**	**Heavy drapes & pelmet**
7.8	0.13	6.32	6.32	5.46	4.20	2.18
7.6	0.13	6.19	6.19	5.36	4.14	2.17
7.4	0.14	6.06	6.06	5.26	4.08	2.15
7.2	0.14	5.92	5.92	5.16	4.02	2.13
7.0	0.14	5.79	5.79	5.05	3.95	2.11
6.8	0.15	5.65	5.65	4.95	3.89	2.10
6.6	0.15	5.51	5.51	4.84	3.82	2.08
6.4	0.16	5.37	5.37	4.73	3.76	2.06
6.2	0.16	5.23	5.23	4.62	3.69	2.04
6.0	0.17	5.08	5.08	4.51	3.61	2.01
5.8	0.17	4.94	4.94	4.40	3.54	1.99

Glazing Unit (no window treatment)		Improved U-values with window treatments				
U-Value	**R-Value**	**Holland Blinds**	**Closed weave curtains**	**Heavy drapes**	**Closed weave curtains & pelmet**	**Heavy drapes & pelmet**
5.6	0.18	4.79	4.79	4.28	3.47	1.97
5.4	0.19	4.65	4.65	4.16	3.39	1.94
5.2	0.19	4.50	4.50	4.04	3.31	1.91
5.0	0.20	4.35	4.35	3.92	3.23	1.89
4.8	0.21	4.20	4.20	3.80	3.14	1.86
4.6	0.22	4.04	4.04	3.67	3.05	1.83
4.4	0.23	3.89	3.89	3.54	2.96	1.79
4.2	0.24	3.73	3.73	3.41	2.87	1.76
4.0	0.25	3.57	3.57	3.28	2.78	1.72
3.8	0.26	3.41	3.41	3.14	2.68	1.69
3.6	0.28	3.25	3.25	3.01	2.58	1.65
3.4	0.29	3.09	3.09	2.86	2.47	1.60
3.2	0.31	2.92	2.92	2.72	2.37	1.56
3.0	0.33	2.75	2.75	2.58	2.26	1.51
2.8	0.36	2.58	2.58	2.43	2.14	1.46
2.6	0.38	2.41	2.41	2.27	2.02	1.40
2.4	0.42	2.24	2.24	2.12	1.90	1.34
2.2	0.45	2.06	2.06	1.96	1.77	1.27
2.0	0.50	1.89	1.89	1.80	1.64	1.20
1.8	0.56	1.71	1.71	1.64	1.50	1.13
1.6	0.63	1.53	1.53	1.47	1.36	1.05
1.4	0.71	1.34	1.34	1.30	1.21	0.96
1.2	0.83	1.16	1.16	1.13	1.06	0.86
1.0	1.00	0.97	0.97	0.95	0.90	0.75
0.8	1.25	0.78	0.78	0.77	0.74	0.63
0.6	1.67	0.59	0.59	0.58	0.56	0.50

Table Notes

(1) Values in the table may be interpolated to reflect U-Values more accurately.

(2) Closed weave curtains have threads or yarns that generally abut, producing a fabric with negligible interstices (gaps). Thus, light, air and water pass through a closed weaved cotton fabric, but with significant filtering, unless the fabric is treated to block their passage; and they prevent visual detail being seen by eye through their fabric if woven from opaque thread or yarn. Closed weave curtains do not include open weave curtains, as open weave fabric is woven so that warp threads rarely abut each other, leaving interstices (gaps) in the fabric, which includes lace, sheer or net fabrics. Open weave curtains provide negligible change to window U-values.

(3) Heavy drapes permit no or negligible visible or UV light to pass through their fabric, which may include a composite of layered materials. They also do not readily allow air to pass through. They include closed weave heavy fabrics, such as velvet or velour or heavy cotton or comparable synthetics, with a rubber, acrylic, or similar, solar blocking backing layer bonded to the fabric. The presence of a light source, including the sun, cannot be detected by eye through the fabric. A key requirement of heavy drapes is to have sufficient inertia to maintain a barrier to air movement by remaining relatively stationary in a draft.

(4) Drapes or curtains must fully cover the window and form part of an enclosure of the layer of air between the drape or curtain and window to minimise air movement caused by convection air currents and air movement caused by HVAC systems, fans, or use of the room. That is achieved, where curtains or drapes—

- (a) are fully within and abut the window recess (reveals) and abut the reveals, head, and sill; or
- (b) overlap side edges of the window by at least 150mm or abut a return wall if the window is in a re-entrant corner, and abut the floor; and
- (c) close together (where openable) with no, or with negligible gaps.
- (d) For the purposes of this note, a drape or curtain is taken to abut a surface where the drape or curtain is not more than 10mm from that surface.

(5) Pelmets must be box pelmets and must work in combination with the curtain or drape to enclose the top of a curtain or drape to prevent air plunging by convection from beside or above the pelmet to the window and must extend to the width of the window plus any required curtain overlap of the window edge. It must overlap the top of the curtain by 50mm or more.

1.3.3 Shading

(1) In determining the *external glazing* thermal performance of an *addition* or *addition & alteration* or the existing dwelling, the shading of the glazing by an external permanent projection or an external shading device shall be in accordance with the requirements of the relevant calculation method used in MBS 013: 1.3.2(3).

Part 1.4 Building sealing

1.4.1 Application

(1) A *conditioned space* or *habitable room* in an *addition* or *addition & alteration* must be sealed by sealing any:

(a) chimneys or flue in accordance with MBS 013: 1.4.2

(b) roof lights in accordance with MBS 013: 1.4.3

(c) windows and doors in accordance with MBS 013: 1.4.4

(d) exhaust fans in accordance with MBS 013: 1.4.5

(e) construction of ceilings, walls, and floors in accordance with MBS 013: 1.4.6

(f) evaporative coolers in accordance with MBS 013: 1.4.7.

(2) The unaltered part of an existing dwelling is not required by MBS 013 to be sealed.

(3) Where the unaltered part of an existing dwelling is not sealed in accordance with MBS 013 or NCC 2022, a *conditioned space* or *habitable room* in the new *addition* or *addition & alteration* must be thermally isolated from the unaltered part in accordance with MBS 013: 1.1.2(3).

(4) The requirements of Part 1.4 are not applicable in the existing part of an *addition & alteration* when sealing can only be undertaken by removing and replacing any existing chimney or flue, roof lights, external windows and doors and exhaust fans and evaporative coolers.

Explanatory Information

Whilst the sealing of the unaltered part of the dwelling is not a requirement of this MBS, it is recommended that sealing be considered as part of the new works as the overall thermal performance of the dwelling will be substantially improved for minimal capital outlay.

1.4.2 Chimneys and flues

(1) *Repairs* to an existing chimney or flue of an open solid fuel burning appliance in a *conditioned space* or *habitable room*:

(a) that does not have a damper or flap installed (that seals the chimney or flue) is not required to have a damper or flap installed, or

(b) that has a damper or flap installed that seals the chimney or flue must not remove or otherwise disable the operation of the damper or flap.

(2) An *alteration* that:

(a) does not include *alterations* to an existing chimney or flue of an open solid fuel burning appliance in a *conditioned space* or *habitable room*, that does not have a damper or flap installed (that seals the chimney or flue), is not required to have a damper or flap installed, or

(b) includes *alterations* to an existing chimney or flue of an open solid fuel burning appliance in a *conditioned space* or *habitable room* that does not have a damper or flap installed must have a damper or flap installed that seals the chimney or flue.

(3) An *alteration*, *addition* or *addition & alteration* that includes a new open solid fuel burning appliance in a *conditioned space* or *habitable room*, the chimney or flue must have a damper or flap that seals the chimney or flue.

1.4.3 Roof lights

(1) *Repairs* to an existing roof light must not reduce its thermal performance.

(2) A new roof light installed in a *conditioned space* or *habitable room* of an *addition* or *addition & alteration* must be sealed, or capable of being sealed, with:

(a) imperforate ceiling diffuser or the like installed at the ceiling or internal lining level

(b) weatherproof seal, or

(c) shutter system readily operated manually, mechanically or electronically by the occupant.

1.4.4 Windows and doors

(1) *Repairs* to an existing window or door must not reduce any installed sealing.

(2) The following windows and doors to an *alteration*, *addition* or *addition & alteration* must be sealed when serving a *conditioned space* or a *habitable room*:

(a) an external door

(b) an internal door or window between an *addition* or *addition & alteration* and the unaltered part of the dwelling, and

(c) an openable *external window*.

(3) Sealing in accordance with MBS 013: 1.4.4. (2) must be

(a) A draft protection device for the bottom edge of the door that seal and restricts air infiltration, and

(b) a foam or rubber compressible strip, fibrous seal or the like for

(i) the other edges of a door or

(ii) the edges of an openable window or other such opening.

(4) A window complying with the maximum air infiltration rates specified in AS 2047 need not comply with (2).

1.4.5 Exhaust fans

(1) Sealing devices may include a self-closing damper, filter or the like.

(2) *Repairs* to an existing exhaust fan serving a *conditioned space* or *habitable room*:

(a) that does not have a sealing device installed, are not required to install a sealing device.

(b) that has a sealing device installed, must not remove or otherwise disable the operation of the sealing device.

(3) Exhaust fans installed in a *conditioned space* or *habitable room* in an *alteration*, *addition* or *addition & alteration* must have a sealing device installed.

Note

A kitchen exhaust fan with a filter is considered as adequately sealed.

1.4.6 Construction of ceilings, walls, and floors

(1) *Repairs* to

(a) ceilings, walls, floors, and

(b) any openings serving a *conditioned space* or *habitable room* that are forming part of the external fabric, such as a window frame, door frame, roof light frame or the like:

(i) are not required to minimise air leakage if the original part being repaired was not constructed to minimise air leakage, or

(ii) must be repaired to maintain the minimum level of air leakage as constructed prior to the repair.

(2) An *alteration*, *addition* or *addition & alteration* must minimise air leakage from

(a) new ceilings, walls and floors, by constructing internal lining systems that are:

(i) close fitting at ceiling, wall, and floor junctions, and

(ii) sealed at junctions, and

(b) any openings serving a *conditioned space* or *habitable room*, such as window frame, door frame, roof light frame or the like, by sealing the openings forming penetrations through ceilings, walls and floors with close-fitting architrave, skirting or cornice; or expanding foam, rubber compressive strip, caulking or the like.

1.4.7 Evaporative coolers

(1) *Repairs* to an existing evaporative cooler serving a *conditioned space* or *habitable room* that:

(a) does not have a self-closing damper or the like that seals against air infiltration is not required to be sealed against air infiltration.

(b) has a self-closing damper or the like that seals against air infiltration must not have the air infiltration sealing removed or its efficiency reduced.

(2) A new evaporative cooler that is to serve a *conditioned space* or *habitable room* must be fitted with a self-closing damper or the like to seal against air infiltration.

Part 1.5 Whole-of-home energy usage

1.5.1 Application

(1) *Repairs* or *minor alterations* are not required to comply with MBS 013: 13B1P2 (Energy usage).

(2) An *alteration*, *addition* or *addition & alteration* that is replacing all *domestic services* must comply with MBS 013: 13B1P2 (Energy usage), which is satisfied by complying with one of the following:

(a) MBS 013: Part 1.5 (Whole-of-home energy usage) and Part 1.6 (Services), or

(b) NCC 2022: 13.6 (Whole-of-home energy usage) and 13.7 (Services) of the ABCB Housing Provisions for a dwelling with a total floor area not greater than 500 m².

1.5.2 Allowed energy usage

(1) Where it is proposed to upgrade the existing heating and cooling and heated water supply system, the net equivalent energy usage of a dwelling, including the new *alteration*, *addition* or *addition & alteration* and the unaltered part, must be in accordance with NCC 2022: Part 13.6.2 (Net equivalent energy usage).

Note

Compliance with MBS 013: 1.5.2 (Allowed energy usage) can be demonstrated using the ABCB 'NCC Whole-of-Home calculator' or NatHERS compliant Whole-of-Home energy usage software.

Explanatory Information

Whole-of-Home energy usage compliance is only required where all the domestic services are being upgraded or replaced in the scope of the *alteration* or *addition* or *addition & alteration*.

Where it is proposed to upgrade individual *domestic services* such as heat pumps and cooling pumps, heated water systems etc, the energy efficiency of the new services will have a direct effect on the dwelling's energy usage. Choosing the higher star rated heating and cooling systems and energy efficient heated water systems is recommended.

Part 1.6 Services

1.6.1 Application

(1) The following *Deemed-to-Satisfy* services provisions apply in an *alteration*, *addition* or *addition & alteration*:

(a) Insulation of services (MBS 013: 1.6.2),

(b) Central heating water piping (MBS 013: 1.6.3),

(c) Heating and cooling ductwork (MBS 013: 1.6.4),

(d) Electric resistance space heating system (MBS 013: 1.6.5),

(e) Artificial lighting (MBS 013: 1.6.6),

(f) Water heater in a heated water supply system (MBS 013: 1.6.7),

(g) Swimming pool heating and pumping (MBS 013: 1.6.8), and

(h) Spa heating and pumping (MBS 013: 1.6.9).

1.6.2 Insulation of services

(1) *Repairs* to central heating water piping and heating and cooling ductwork shall not reduce the thermal performance of the existing piping and ductwork.

(2) Thermal insulation for central heating water piping and heating and cooling ductwork in an *addition* or *addition & alteration* must be in accordance with NCC 2022: 13.7.2 (Insulation of services).

1.6.3 Central heating water piping

(1) *Repairs* to central heating water piping not within a *conditioned space* shall not reduce the thermal performance of the existing central heating water piping.

(2) New central heating water piping not within a conditioned space and

(a) servicing an *addition* or *addition & alteration*, and

(b) where practicable, an *alteration* and the unaltered part of an existing dwelling,

must be thermally insulated to achieve the minimum material R-Values in accordance with NCC 2022: 13.7.3 (Central heating water piping).

1.6.4 Heating and cooling ductwork

(1) *Repairs* to heating and cooling ductwork not within a *conditioned space* shall not reduce the thermal performance of the existing ductwork.

(2) New heating and cooling ductwork, fittings and duct insulation not within a *conditioned space* and

(a) servicing an *addition* or *addition & alteration*, and

(b) where practicable, an *alteration* and the unaltered part of an existing dwelling,

must be designed and installed in accordance with NCC 2022: 13.7.4 (Heating and cooling ductwork).

1.6.5 Electric resistance space heating

(1) *Repairs* to electrical resistance space heating must not:

(a) remove any existing separate room isolating switches or temperature controllers.

(b) increase power loads such that there is no longer compliance with power load limits set by NCC 2022: 13.7.5 (Electrical resistance space heating).

(2) A new electric resistance space heating system that serves more than one room

(a) servicing an *addition* or *addition & alteration*, and

(b) where practicable, an *alteration* and the unaltered part of an existing dwelling,

must be designed and installed in accordance with NCC 2022: 13.7.5 (Electrical resistance space heating).

1.6.6 Artificial lighting

(1) New artificial lighting to an *alteration*, *addition* or *alteration & addition*, as well as the unaltered part, must be designed and installed in accordance with NCC 2022: 13.7.6 (Artificial lighting).

1.6.7 Water heater in a heated water supply system

(1) A new water heater in a heated water supply system

(a) servicing an *addition* or *addition & alteration*, and

(b) where practicable, an *alteration* and the unaltered part of an existing dwelling,

must be designed and installed in accordance with NCC 2022: 13.7.7 (Water heater in a heated water supply system).

1.6.8 Swimming pool heating and pumping

(1) Where an *addition* or *addition & alteration* includes a new Class 10b swimming pool, the heating and pumping must be in accordance with NCC 2022: 13.7.8 (Swimming pool heating and pumping).

1.6.9 Spa pool heating and pumping

(1) Where an *addition* or *addition & alteration* includes a new Class 10b spa pool that shares a water recirculation system with a Class 10b swimming pool, the heating must be in accordance with NCC 2022: 13.7.9 (Spa pool heating and pumping).

Part 1.7 Relocated Dwelling

1.7.1 Application

(1) An existing dwelling is relocated if it is moved from one allotment to another or relocated on the same allotment. A relocated dwelling is considered an *alteration*.

(2) The following energy efficiency provisions applicable to a relocated dwelling:

(a) Where there is no access to external walls spaces, or no removal of wall linings there is no requirement to comply with MBS 013: Part 1.2.5 (External walls).

(b) Where there is no access to roof or ceiling spaces, or no removal of roof sheets or ceiling linings there is no requirement to comply with MBS 013: Part 1.2.3 (Roofs and ceilings).

(c) Where the sub-floor space to the underside of the floor is less than 500mm in Climate Zone 6, and there is no proposed removal of floor linings, there is no requirement to comply with MBS 013: Part 1.2.6 (Floors and sub-floor walls).

(d) Where wall or floor or ceiling linings are removed and replaced or roof lights installed, the building fabric must be in accordance with MBS Part 1.2 (Building fabric).

(e) Where existing external windows are replaced, or new external windows added they must be in accordance with MBS 013 Part 1.3 (External glazing).

(f) A relocated dwelling must be sealed in accordance with MBS 013 Part 1.4 (Building sealing)

(g) A relocated building that has all domestic services replaced must be in accordance with MBS 015 Part 1.5 (Whole-of-home energy usage).

(h) A relocated dwelling that has new domestic services installed in the relocated dwelling or is undergoing alteration, addition or addition & alteration must comply with MBS 013 Part 1.6 (Services).

SECTION C – LIVABLE HOUSING DESIGN

Part 13C1 Livable Housing Design Performance Requirements

Introduction

NCC 2022 sets out requirements for the inclusion of accessibility and usability features to new Class 1 dwellings for occupants and visitors, including those with a mobility-related disability.

(1) Building access provisions for Class 1b dwellings must comply with NCC 2022: Part D4 (Access for people with a disability).

(2) Livable Housing Design provisions for Class 1a dwellings must comply with NCC 2022: Part H8 (Livable housing design).

This MBS details how the NCC 2022 Livable Housing Design (LHD) requirements are to be applied when undertaking an *alteration*, *addition, addition & alteration* and *repairs* to existing Class 1a dwellings.

13C1P1 Livable housing design

Repairs, an *alteration, addition* or *addition & alteration* to existing Class 1a dwellings must comply with NCC 2022: H8P1 (Livable housing design) to the extent demonstrated by MBS 013: Part 13C2 (Livable Housing Design Deemed-to-Satisfy).

Explanatory Information

The NCC 2022 LHD Objective requires housing be designed to meet the needs of the community, including older people and those with a mobility-related disability.

The associated Functional Statement requires a dwelling be designed to be:

(a) easy to enter

(b) easy to navigate in and around

(c) capable of easy and cost-effective adaptation, and

(d) responsive to the changing needs of occupants.

Part 13C2 Livable Housing Design Deemed-to-Satisfy

13C2D1 Deemed-to-Satisfy Provisions

(1) Where a *Deemed-to-Satisfy Solution* is proposed, Performance Requirements 13C1P1 (Livable housing design) is satisfied by complying with Part 13C2 (Livable Housing Design Deemed-to-Satisfy).

(2) Where a *Performance Solution* is proposed, the relevant Performance Requirements must be determined in accordance with 13A2A2 and 13A2A4 as applicable.

13C2D2 Application

(1) *Repairs* or *minor alterations* to a dwelling that is constructed in accordance with NCC 2022 H8P1 (Livable housing design) must maintain compliance with NCC 2022: H8P1.

(2) *Performance Requirement* 13C1P1 (Livable housing design) for livable housing design in an existing dwelling that is either an *addition*, *alteration* or *addition & alteration* is satisfied by complying with:

(a) NCC 2022: H8D1 (Deemed-to-Satisfy Provisions), or

(b) MBS 013: 13C2D3 (Livable Housing Design Provisions)

13C2D3 Livable Housing Design Provisions

Part 2.1 Scope

2.1.1 Scope

(1) The following Livable Housing Design (LHD) Deemed-to-Satisfy Provisions apply to an *addition*, *alteration* or *addition & alteration*:

(a) Dwelling access (see refer MBS 013: Part 2.2)

(b) Dwelling entrance (refer MBS 013: Part 1.3)

(c) Internal doors and corridors (refer MBS 013: Part 1.4)

(d) Sanitary compartment (refer MBS 013: Part 1.5)

(e) Shower (refer MBS 013: Part 1.6)

(f) Reinforcement of bathroom and sanitary compartment walls (refer MBS 013: Part 1.7)

Part 2.2 Dwelling access

2.2.1 Application

(1) Unaltered parts of an existing dwelling need not comply with MBS 013: Part 2.2.

(2) An *alteration*, *addition* or *addition & alteration* must comply with MBS 013: 2.2.2 (Step-free access path) and 2.2.3 (Parking space incorporated into step-free access path).

2.2.2 Step-free access path

(1) A continuous step-free access path to the dwelling entrance must be provided and constructed in accordance with the ABCB Livable Housing Design (LHD) Standard Clause 1.2 (Step-free access path) where an *addition* or *addition & alteration* incorporates a:

(a) new or altered pedestrian entry at the allotment boundary from ground level of the adjoining land

(b) new Class 10a garage or carport, or

carparking space provided for the exclusive use of occupants of the dwelling.

(2) MBS 013: 2.2.2(1) is not applicable if the site conditions such as gradients, house setbacks, including side boundary setbacks, ground and paving levels, result in excessive ramp gradients, and insufficient space for step free access path.

2.2.3 Parking space incorporated into step-free access path

(1) Where an *addition* or *addition & alteration* incorporates a new parking space that forms part of a required access path, it must be constructed in accordance with ABCB LHD Standard Clause 1.3 (Parking space incorporated into step-free access path).

(2) MBS 013: 2.2.3(1) is not applicable if the site conditions such as gradients, house setbacks, and ground and paving levels result in excessive ramp gradients, insufficient space for step free access path and carparking constraints, including the ability to access the step free access path from the vehicle in the carparking space.

Part 2.3 Dwelling entrance

2.3.1 Application

(1) Where a dwelling entrance is connected to a step-free access path or may be connected to a step-free access path in the future, an entrance door complying with MBS Part 2.3 must be designated and be in accordance with MBS 013: 2.3.2.

(2) An entrance door in an *alteration*, *addition* or *addition & alteration* is not required to comply with MBS 013: Part 2.3 if there is an existing entrance door that complies.

(3) Unaltered parts need not comply with MBS 013: Part 2.3.

2.3.2 Clear opening width

(1) An *alteration*, *addition* or *addition & alteration* that incorporates a:

(a) new *entrance door* and frame, or

(b) new *entrance door* (incorporating a sidelight) and frame,

must have a clear opening width of the *entrance door* of 820mm in accordance with ABCB LHD Standard Clause 2.1 (Clear opening width).

(2) An *alteration* that includes an *alteration* to a dwelling entrance is not required to comply with MBS 013: 2.3.2 (1) if:

(a) the existing external door opening being altered (after the existing external door and frame is removed) has insufficient width to allow compliance with the clear opening width required by MBS 013: 2.3.2 (1),

(b) the existing unaltered corridor adjoining the required LHD compliant *entrance door,* has insufficient width to allow compliance with the clear opening width required by MBS 013: 2.3.2 (1), or

there is a different external entrance (existing or proposed by the *alteration, addition* or *addition & alteration*) that is or will be compliant with MBS 013: Part 2.3.

Explanatory Information

When altering an existing dwelling to meet the Livable Housing clear opening width requirements, the installation of a new entrance door and frame may require the widening of the opening that will house the new door and frame. This will require partial external wall demolition and upgrading the lintel over the opening. In these circumstances the requirement to comply with the Livable Housing provisions is not mandated.

The compliance exemption is not extended to an *addition* or an *addition & alteration* as there should be sufficient design flexibility to allow compliance.

2.3.3 Threshold

(1) An *alteration*, *addition* or *addition & alteration* that incorporates a new entrance door and door frame must have a threshold in accordance with ABCB LHD Standard Clause 2.2 (Threshold) or MBS 013: 2.3.3(2).

(2) The threshold of an entrance door that is subject to MBS 013: 2.3.1 must:

(a) be level

(b) have a height not more than 5 mm if the lip is rounded or bevelled, or

(c) have a ramped threshold that:

(i) does not extend internally beyond the depth of the door frame

(ii) has a gradient not steeper than 1:8

(iii) is at least as wide as the minimum clear opening width of the doorway it serves, and

(iv) intrudes into the minimum dimensions of the landing area by no more than 450mm.

(3) An *alteration* that includes an alteration to a dwelling entrance is not required to comply with MBS 013: 2.3.3(1) if compliance requires the raising of the existing internal sub-floor, flooring, floor covering or existing verandah sub-floor, or verandah floor surface finish that is not otherwise required to be raised.

2.3.4 Landing area

(1) An *addition* or *addition & alteration* that incorporates a new *entrance door* that is required to have a clear opening width in accordance with MBS 013: 2.3.12 and a threshold in accordance with MBS 013: 2.3.3, must have a 1200 mm x 1200 mm landing area on the external side of the entrance door that is:

(a) unobstructed (other than by a gate or a screen door), and

(b) the part of the landing area that is not part of the ramped threshold shall be level or have a gradient not more than 1:40 if a gradient is necessary to allow for drainage.

(2) Where the required space for a landing area in accordance with MBS 013: 2.3.4(1)(a) is not available, the landing area shall be made as large as practicable.

2.3.5 Weatherproofing for external entrance

(1) Where an *alteration*, *addition* or *addition & alteration* includes a step free entrance threshold, the threshold must be made weatherproof in accordance with ABCB LHD Standard Clause 2.4 (Weatherproofing for external entrance).

Explanatory Information

Where an *alteration* to an existing dwelling includes a step free entrance threshold, the threshold must be made weatherproof and this may require the provision of a roof covering over the 1200mm x 1200 mm landing area if the landing area is not under an existing verandah or 1200 mm eaves.

Part 2.4 Internal doors and corridors

2.4.1 Application

(1) Unaltered parts need not comply with MBS 013: Part 2.4.

(2) An *alteration, addition* or *addition & alteration* that includes an internal doorway that connects to or is in a path of travel to:

(a) a *habitable room* or laundry on the ground or entry level

(b) an attached class 10a garage or carport that forms part of the access path to an *entrance door* required by MBS 013: 2.3.1

(c) a *sanitary compartment* on the ground floor that complies with the ABCB LHD Standard

(d) a room containing a *shower* that complies with the ABCB LHD Standard

must have a minimum clear opening width accordance with MBS 013: 2.4.2 and a threshold in accordance with MBS 013: 2.4.3.

(3) An *alteration, addition* or an *addition & alteration* that incorporates a corridor that is connected to a door that connects to or is in a path of travel to areas listed in MBS 013: 2.4.1(2) (a)-(d), must comply with MBS 013: 2.4.4.

(4) Subject to MBS 013: 2.4.2(4), an *alteration* that includes the provision of a new internal door, that connects to or is in a path of travel to areas listed in MBS 013: 2.4.2(1) (a)-(d), must have a minimum clear opening width in accordance with MBS 013: 2.4.2 and a threshold in accordance with MBS 013: 2.4.3.

(5) Where compliance with ABCB LHD Standard Part 3.1 (Clear opening width) and Part 3.3 (Corridor width) cannot be achieved due to space restrictions in the existing dwelling, an *alteration* must comply to the extent that door clear opening widths and corridor widths are not narrower than the original widths.

2.4.2 Clear opening width

(1) Where required by MBS 013: 2.4.1, internal doorways must provide a minimum clear opening width of 820mm in accordance with ABCB LHD Standard Clause 3.3 (Clear opening width).

2.4.3 Threshold

(1) Where required by MBS 013: 2.4.1, an *alteration*, *addition* or *addition & alteration* that incorporates a new internal door with a compliant clear opening width of 820mm must have a threshold that:

- (a) is level
- (b) has a height not more than 5 mm if the lip is rounded or bevelled, or
- (c) has a ramped threshold that :
  - (i) does not extend beyond the depth of the door jamb
  - (ii) has a gradient not steeper than 1:8, and
  - (iii) is at least as wide as the minimum clear opening width of the doorway it serves.

(2) MBS 013: 2.4.3(1) is not applicable if compliance requires the raising of the existing internal sub-floor, flooring, or surface finish that is not otherwise required to be raised.

2.4.4 Corridor width

(1) Where required by MBS 013: 2.4.1(2) (b), an *alteration*, *addition* or *addition & alteration* must have a minimum clear width of 1000mm in accordance with ABCB LHD Standard 3.3 (Corridor width).

(2) MBS 013: 2.4.4(1) is not applicable if the corridor that is connected to a door that connects to or is in a path of travel to areas listed in MBS 013: 2.4.2 (1) (a)-(d), is existing and is less than the required 1000 mm width.

Part 2.5 Sanitary compartment

2.5.1 Application

(1) Where there are no compliant *sanitary compartments*:

(a) a new *sanitary compartment* included in an *alteration*, *addition* or *addition & alteration* must be in accordance with MBS 013: Part 2.5.

(b) an *alteration* to a *sanitary compartment* that increases the floor area of the sanitary compartment must be in accordance with ABCB LHD Standard Clause 4.2 (Circulation space).

(2) Unaltered parts need not comply with MBS 013: Part 2.5.

2.5.2 Circulation space

(1) A new sanitary compartment required by MBS 013: 2.5.1(1) must be constructed in accordance with ABCB LHD Standard Clause 4.2 (Circulation space)

2.5.3 Compliant sanitary compartment

(1) A *sanitary compartment* that:

(a) is located on the ground or entry floor, or on the lowest level of a Class 1a dwelling with a habitable room,

(b) has circulation spaces in accordance with MBS 013: 2.5.2

is a compliant *sanitary compartment*.

(2) An existing bathroom containing a water closet pan that has circulation spaces in accordance with MBS 013: 2.5.2 is a compliant *sanitary compartment*.

Part 2.6 Shower

2.6.1 Application

(1) A Class 1a dwelling must include at least one *shower* located on any floor level that complies with ABCB LHD Standard Clause 5.2 (Hobless and step-free entry).

(2) Where an existing dwelling does not have a *shower* with a hobless and step-free entry in accordance with MBS 013: 2.6.1(1):

(a) an *alteration* to a bathroom that removes existing floor and wall tiles or relocates sanitary waste plumbing to suit revised sanitary fixture locations, or

(b) an *addition* or *addition & alteration* that includes a bathroom,

must include a *shower* with a hobless and step free entry that complies with ABCB LHD Standard Clause 5.2 (Hobless and step-free entry).

(3) Unaltered parts need not comply with MBS 013: Part 2.6.

2.6.2 Hobless and step free entry

(1) Where a shower is required to have a hobless and step-free entry, the shower must have a:

(a) water bar with a maximum height of 5 millimetres installed above and sealed to the waterstop at the shower entry, or

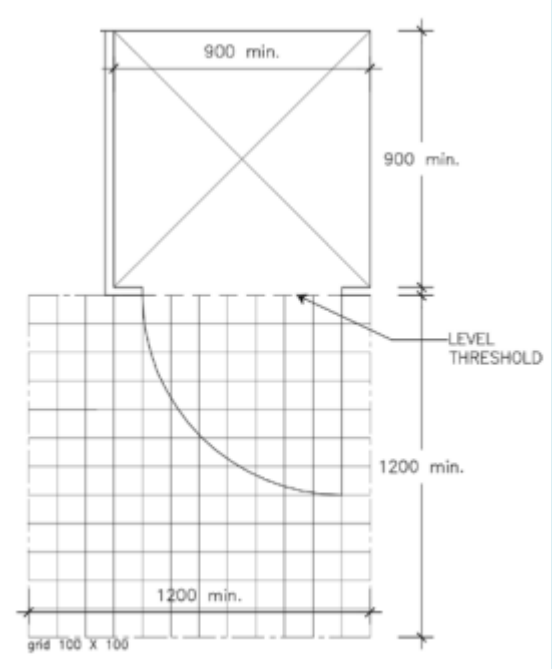
(b) linear drain at the shower entry in accordance with AS 3740

and be waterproofed in accordance with AS 3740 or Part 10.2 of the ABCB Housing Provisions.

Appendix B – Shower hobless and step-free entry details provided for informative purposes only.

Explanatory Information

The ABCB LHD Standard does not stipulate a minimum shower size. The Livable Housing Australia LHD Guidelines recommend a minimum shower size of 900 mm x 900 mm with a 1200 mm x 1200 mm circulation space adjacent a 700 mm (minimum) wide shower door.



Where possible the shower area and circulation space in a bathroom *alteration* or *addition* should be no less than this stated minimum.

A shower area is required to have a waterproof membrane below the tiled floor surface and a shower area can be enclosed or unenclosed. An enclosed shower including the extent of the under tile waterproof membrane is confined to the enclosed shower area.

Where the shower area does not have a shower screen or has a shower screen that does not confine the water to the shower area, it is deemed as unenclosed, and the entire bathroom floor is required to have a waterproof membrane installed below the tiles in accordance with AS 3740.

The Livable Housing requirement for a hobless and step-free enclosed shower relies on a 5mm projection above the tiles at the line of the shower screen to keep water inside the shower area and drain to the shower waste.

AS 3740 considers a shower without a hob or set down as unenclosed and consideration should be given to calling the shower area unenclosed (irrespective of the installation of a shower screen) and applying a waterproof membrane to the whole bathroom floor.

Keeping water within the shower area relies on adequate falls to the shower waste and floor waste and careful attention needs to be paid to maintaining the correct floor falls. Where the bathroom size is at a minimum, keeping water from travelling beneath the bathroom door to the adjoining spaces can also be difficult and consideration should be given to a bathroom door threshold strip drain.

Where a shower screen is installed, the addition of a proprietary water deflector at the bottom of the shower screen door will help to deflect water back into the shower area and should be considered. Bathroom floor tiling should be continuous and be under any shower screen as the shower screen may need removing or modifying later.

Part 2.7 Reinforcement of bathroom and sanitary compartment walls

2.7.1 Application

(1) An *addition* or *addition & alteration* that contains a:

(a) *sanitary compartment* that is subject to MBS 013: Part 2.5

(b) bathroom containing a shower that is subject to MBS 013: Part 2.6, or

(c) bath (not being a freestanding bath) that is in a room containing a *shower* that is subject to MBS 013: Part 2.6

must have reinforcing provided to bathroom and sanitary compartment walls in accordance with ABCB LHD Standard Part 6 (Reinforcement of bathroom and sanitary compartment walls).

(2) An a*lteration* to an existing:

(a) sanitary compartment that is subject to MBS 013: Part 2.5

(b) bathroom containing a shower that is subject to MBS 013: Part 2.6, or

(c) bath (not being a freestanding bath) that is in a room containing a shower that is subject to MBS 013: Part 2.6

must, where the *alteration* exposes the wall frame in the locations shown in with ABCB LHD Standard Part 6 (Reinforcement of bathroom and sanitary compartment walls), have reinforcing installed in accordance with ABCB LHD Standard Part 6.

(3) The requirements of MBS 2.7.1(1) and 2.7.1(2) do not need not be complied with if the walls of the room are constructed of concrete, masonry or another material capable of supporting grabrails without additional reinforcement.

2.7.2 Construction

(1) Wall reinforcing constructed in an *alteration*, *addition* or *addition & alteration* in accordance with MBS 013: 2.7.1 must be:

(a) provided in locations shown in ABCB LHD Standard Part 6.2 (Construction).

(b) constructed using materials in accordance with ABCB LHD Standard Part 6.2 (Construction).

Part 2.8 Relocated Dwelling

2.8.1 Application

(1) In accordance with MBS 013: 1.7.1 (1), a relocated dwelling is considered an *alteration*.

(2) Livable housing provisions applicable to a relocated dwelling must be in accordance with MBS 013: 13C2D2 (Application).

Specification 01 House energy rating software

Explanatory information NatHERS Rating

The use of NatHERS software is considered a Deemed-to-Satisfy (DtS) solution under the NCC 2022, where the whole dwelling (i.e. existing and *alteration*) is brought into compliance with the 7-star rating (under DtS clause H6D2(1)(a)) and the whole-of-home rating (under DtS clause H6D2(2)(a)).

Assessing the energy efficiency of an *alteration* and/or *addition* using software that is designed for new dwellings is not an NCC DtS solution.

It is included in this MBS as a DtS solution but limited to an *addition* that increases a dwellings floor area by no more than 50%.

The assessment requires the existing dwelling (before new work) to be rated and the volumes of the existing and new *conditioned spaces* are placed into a formula and a revised compliant star rating is determined.

The proposed new dwelling is re-rated using the proposed thermal performance enhancements and the new rating must equal or be more than the calculated star rating.

S01C1 Application

(1) House energy rating software may be used with an *addition* or *addition & alteration* when the existing dwelling's floor area is increased by no more than 50%.

(2) For the purpose of S01C1(1), the percentage increase in floor area is calculated using:

(a) total floor area of the habitable rooms in the existing dwelling (measured on inside of external walls) and disregarding any area to be demolished, and

(b) total floor area (measured on inside of any external walls) of new habitable rooms forming any *addition*.

S01C2 Heating and cooling loads

(1) A dwelling must achieve an energy rating, including the separate heating and cooling load limits, using *house energy rating* software, of greater than or equal to an adjusted energy star rating calculated in accordance with S01C3.

S01C3 Calculation of adjusted star rating for additions (no or minor alterations)

(1) The adjusted star rating (SRr) is calculated using the area of the existing unaltered portion of the dwelling (Ve), the existing dwellings star rating (SRe), the area of the new addition (Vn), and the NCC required star rating of the new addition (SRn).

(2) *Addition* to an existing dwelling with no *alteration* work, the formula used is

$$SRr = \frac{(Ae \times SRe) + (An \times SRn)}{(Ae + An)}$$

Where:

(a) **SRe** is the NatHERS star rating of the existing dwelling (without the *addition*) and must be calculated using any NatHERS accredited house energy rating software.

(b) **SRn** is the NCC 2022 NatHERS star rating for the new work of the new *addition* (7 stars).

(c) **Ae** is the existing unaltered area (measured to inside of external walls).

(d) **An** is the total area of new *addition* work (measured to inside of external walls).

(3) For the purposes of the S01C3 formula, where there is work to existing building fabric, the S01C3 formula for an adjusted star rating is not applicable and the adjusted star rating shall be in accordance with S01C4.

666S01C4 Calculation of adjusted star rating for additions and alterations

(1) The adjusted star rating (SRr) is calculated using the area of the existing unaltered portion of the dwelling (Ae), the existing dwellings star rating (SRe), the area of the new *addition* (An), and the NCC required star rating of the new *addition* (SRn).

(2) *Addition* to an existing dwelling including internal *alteration* work, the overall star rating required (SRr) is calculated by

$$SRr = \frac{[(Ae - Ani) \times SRe] + [(An + Ani) \times SRn]}{(Ae + An)}$$

Where:

(a) **SRe** is the NatHERS star rating of the existing dwelling (without the *addition*) and must be calculated using any NatHERS accredited house energy rating software

(b) **SRn** is the NCC 2022 NatHERS star rating for the new work of the *addition* (7 stars)

(c) **Ae** is the sum of the existing area of each zone (measured to the inside of walls) as assessed to comply with S01C3 (2)(a), noting that un-conditioned spaces are not included.

(d) **An** is the area of the new *addition* work (measured to the inside of *addition* walls).

(e) **Ani** is the area of the new internal *alteration* work (measured to the inside of walls).

(3) For the purposes of the MBS 013: S01C4 formula,

(a) rooms adjacent proposed work to existing building fabric such as new external windows or new or replaced wall linings shall be considered an *alteration*, and

(b) the area of room shall be included in area of new internal alteration work (Ani) irrespective of whether building fabric alteration is the only *alteration*.

Explanatory information:

1. An example of the use of the formula for adjusted star rating for additions (no or minor alterations)

SRr	**Total Star rating required**	**4.0**			
Ae	The existing unaltered area	102	An	the area of the new addition	27
SRe	NatHERS star rating of the existing dwelling	3.2	SRn	NCC 2022 NatHERS star rating for the new addition	7
Ae x SRe	102 x 3.2	326.4	An x SRn	27 x 7	189
Ae + An	75 + 42	129	**SRr**	**(326.4 + 189) /129**	**4.0**

$$SRr = \frac{(Ae \times SRe) + (An \times SRn)}{(Ae + An)}$$

The required star rating for the existing building plus the addition is 4.0 stars.

2. An example of the use of the formula for adjusted star rating for additions and internal alteration work (no or minor alterations)

SRr	**Total Star rating required**	**5.4**			
Ae	The existing unaltered area	102	An	Area of the new additions	42
Ani	New internal alterations within the curtilage of the existing building	41	SRn	NCC 2022 NatHERS star rating for the new addition	7
SRe	NatHERS star rating of the existing dwelling	3.2			
Ae - Ani	102 - 41	63	An + Ani	42 + 41	83
(Ae – Ani) x SRe	63 x 3.2	201.6	(An + Ani) x SRn	83 x 7	581
Ae + An	102 + 42	144	**SRr**	**(201.6 + 581) / 144**	**5.4**

$$SRr = \frac{[(Ae – Ani) \times SRe] + [(An + Ani) \times SRn]}{(Ae + An)}$$

The required star rating for the existing building plus the addition and alterations is 5.4 stars.

Schedule 1 Definitions

Abbreviations

Refer to NCC Schedule 1 Abbreviations.

Symbols

Refer to NCC Schedule 1 Symbols.

Glossary

Act means the Planning, Development and Infrastructure Act 2016.

Addition means an extension or increase in floor area, number of storeys, or height of an existing dwelling.

Addition & alteration means the addition of one or more habitable rooms that extend into the curtilage of the existing walls, floors and roof of a dwelling.

Alteration any change to an existing dwelling involving building work within the curtilage of the existing walls floor and roof or the relocation of a building on land that is required by the *Regulations* to comply with the *Building Rules*. An alteration can include:

- rearrangement of any space by constructing walls or partitions or by changing ceiling height
- addition or elimination of any door or window in a wall providing lateral load resistance
- change in roofing material
- work or actions that reduce the load-bearing capacity of a primary building element
- installation of additional equipment or fixtures, work or actions that impose additional loads on a primary building element.
- relocation of an existing dwelling that is re-erected, moved from one allotment to another or relocated on the same allotment.

In this MBS, an alteration does not include *repairs* or *minor alterations*.

Building consent means any approval or permit to build issued under the *Act* or any previous Act governing the control of building work in South Australia and includes a development approval.

Building certifier has the same meaning as section 92 of the *Act*.

Building Code has the same meaning as defined in section 3 of the *Act.*

Building Rules has the same meaning as defined in section 3 of the *Act.*

Cavity has the same meaning as defined in the Building Code.

Cavity wall has the same meaning as defined in the Building Code.

Change of use means a change in the purpose or level of activity within a building. A *change of use* may or may not trigger a change of building classification to the one previously assigned to it and for which it was designed, constructed and occupied.

Climate zone has the same meaning as defined in the NCC and means an area defined in NCC Glossary Figure 2 and in Table 3 for specific locations, having energy efficiency provisions based on a range of similar climatic characteristics.

CLIMATE ZONE 4			
Kimba (North area)	Port Augusta	Port Pirie City and Districts	Mount Remarkable (West area)
Whyalla	Unincorporated SA (part)		
CLIMATE ZONE 5			
Adelaide	Adelaide Hills	Barossa (Sandy Creek),	Barunga West
Berri and Barmera	Burnside	Campbelltown	Ceduna
Charles Sturt	Clare and Gilbert Valley (adjacent Mid-Murray)	Cleve	Copper Coast
Elliston	Flinders Ranges	Franklin Harbour	Gawler
Holdfast Bay	Kimba	Lower Eyre Peninsula	Loxton Waikerie
Mitcham	Mid Murray	Mount Remarkable	Northern Areas (adjacent Port Pirie City and Districts)
Norwood Payneham St Peters	Onkaparinga	Orroroo/Carrieton	Playford
Port Adelaide Enfield	Prospect	Renmark Paringa	Prospect
Streaky Bay	Tea Tree Gully	Tumby Bay	Unley
Wakefield	Walkerville	West Torrens	Wudinna
Unincorporated SA (part)			
CLIMATE ZONE 6			
Adelaide Hills	Alexandrina	Barossa	Clare and Gilbert Valleys
The Coorong	Goyder	Grant	Kangaroo Island
Karoonda East Murray	Kingston	Light	Mount Barker
Mount Gambier	Murray Bridge	Naracoorte and Lucindale	Northern Areas and Peterborough
Robe	Southern Mallee	Tatiara	Victor Harbor
Wattle Range	Yankalilla		

Conditioned space has the same meaning as defined in the Building Code.

Cooling load has the same meaning as defined in the Building Code.

Deemed-to-Satisfy Provisions has the same meaning as defined in the Building Code.

Deemed-to-Satisfy Solution has the same meaning as defined in the Building Code.

Domestic services has the same meaning as defined in the Building Code.

Energy value has the same meaning as defined in the Building Code.

Entrance door: means an entrance door to the dwelling and may be the front door, or a door other than the front door, side door or side door that is connected to a garage via a step-free path.

Envelope: means the parts of a dwelling's fabric that separate artificially heated or cooled spaces from the exterior of the dwelling; or other spaces that are not artificially heated or cooled.

Expert judgement has the same meaning as defined in the Building Code.

External glazing means both the glass and the glass and frame of a glazing unit.

External wall has the same meaning as defined in the Building Code.

Fabric has the same meaning as defined in the Building Code.

Glazing has the same meaning as defined in the Building Code.

Habitable room: has the same meaning as defined in the Building Code.

Heritage building means a building or structure listed in the South Australian Heritage Register or in a local council development plan as a State or local heritage place or object that is protected under the Heritage Places Act 1993 and the Act.

House energy rating software has the same meaning as defined in the Building Code.

Lightweight construction has the same meaning as defined in the Building Code.

Minimum Energy Performance Standards (MEPS) has the same meaning as defined in the Building Code.

Minor alterations means changes to an existing dwelling that will not adversely affect its structural soundness or the health and safety of any person occupying or using it, and may include:

- fit-outs to rooms and spaces that do not involve structural alterations or increase fire safety risks for occupants
- addition or elimination of any door or window that does not provides lateral load resistance
- reconfiguration or extension of any existing system, or
- installation of additional equipment or fixtures that do not impose additional loads on a primary building element.

Overhang has the same meaning as Roof Overhang

Performance Requirement has the same meaning as defined in the Building Code.

Performance Solution has the same meaning as defined in the Building Code.

Piping has the same meaning as defined in the Building Code.

Primary building element has the same meaning as defined in the Building Code.

Professional engineer has the same meaning as defined in the Building Code.

Reflective insulation has the same meaning as defined in the Building Code.

Regulations mean the Planning, Development and Infrastructure (General) Regulations 2017.

Relevant authority has the same meaning as defined in section 3 of the Act.

Repairs means repairs to damaged materials, elements, equipment or fixtures necessary to maintain them in good or sound condition and includes the removal and replacement or covering of existing materials, elements, equipment or fixtures using new materials, elements, equipment or fixtures that serve the same purpose.

Required means required as part of a building approval previously issued for the building or part of the building, or by the Building Code or this Standard as relevant.

Roof light has the same meaning as defined in the Building Code.

Roof Overhang means the projection of a roof beyond the line of the wall which carries it, including any fascia but excluding any gutter.

R-Value has the same meaning as defined in the Building Code.

Sanitary compartment has the same meaning as defined in the Building Code.

Sector means the directional sector as shown in NCC 2022 Figure 13.3.2a Orientation Sectors.

Shower means an enclosed or unenclosed space that is directly affected by water from a shower.

Solar absorptance (SA) (of a surface) means the fraction of the sun's radiation that the surface absorbs. Materials are classified using a solar absorptance value ranging from 0 to 1 and may be a fraction of 1 or a percentage. Higher values indicate the surface absorbs a larger amount of solar radiation.

Total System U-Value has the same meaning as defined in the Building Code.

Verification Method has the same meaning as defined in the Building Code.

Window has the same meaning as defined in the Building Code.

Schedule 2 Referenced documents

The Standards and other documents listed in this schedule are referenced in MBS 013.

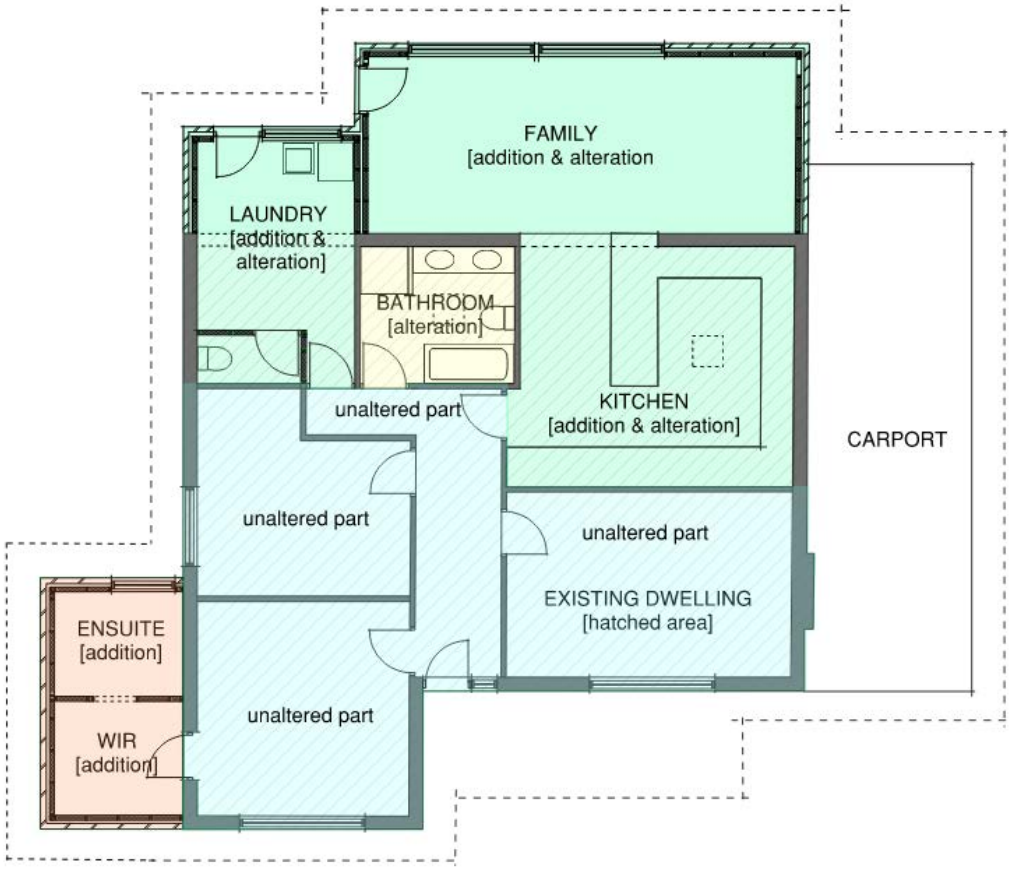
Table C1.1 – Schedule of referenced standards and documents

No	Title
ABCB	Housing Provisions Standard
ABCB	Livable Housing Design Standard
AS 1668 Part 2	The use of ventilation and air conditioning in buildings — Mechanical ventilation in buildings The use of ventilation and air-conditioning in buildings – Mechanical ventilation in buildings
AS 2047	Windows and external glazed doors in buildings
AS 3740	Waterproofing of domestic wet areas
ISO 717 Part 1	Acoustics – Rating of sound insulation in buildings and of building elements – Airborne sound insulation

Appendix A Area Calculation for 13B3D2 Application

For the purposes of applying clause *13B3D2 – Application*, the increase in the floor area of the habitable rooms must be calculated.

The following example illustrates the calculation:



		Rooms/spaces	Area (m^2)
Existing Dwelling	Habitable rooms	Kitchen	25
		Unaltered part (less hall / passage)	50
	Non-habitable	Unaltered part – hall / passage	11
		Bathroom	8
		Laundry	8
Addition	Habitable rooms	Family Room	27
	Non-habitable	Laundry (Part)	5
		Ensuite	5
		WIR	5

Total area of habitable rooms in the existing dwelling = Kitchen + Hall / Passage = 75 m^2

Total area of habitable rooms in the addition = Family Room = 27 m^2

Percentage increase is 36%.

Note: the floor area is measured to the inside face of the external walls.

Appendix B Shower hobless and step-free entry details

Figures A4(3) to A4(4)(b) are for informative purposes only.

Figure A4(3)

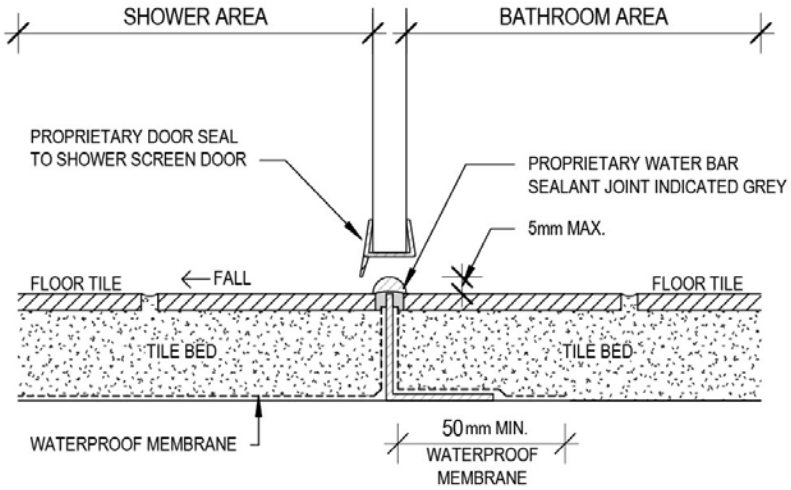


Figure A4(4)(a)

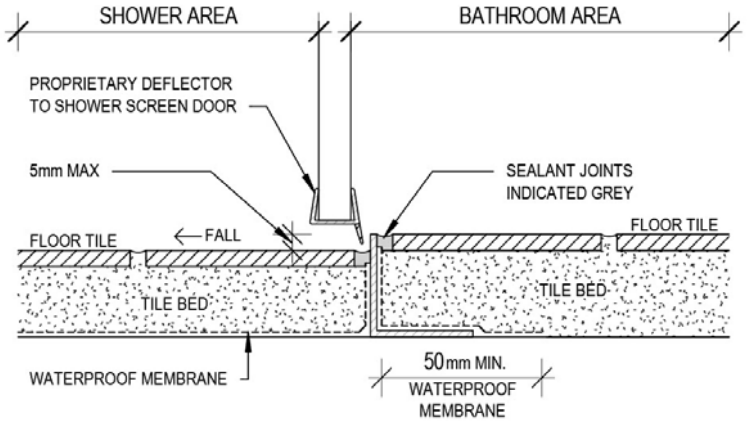


Figure A4(4)(b)

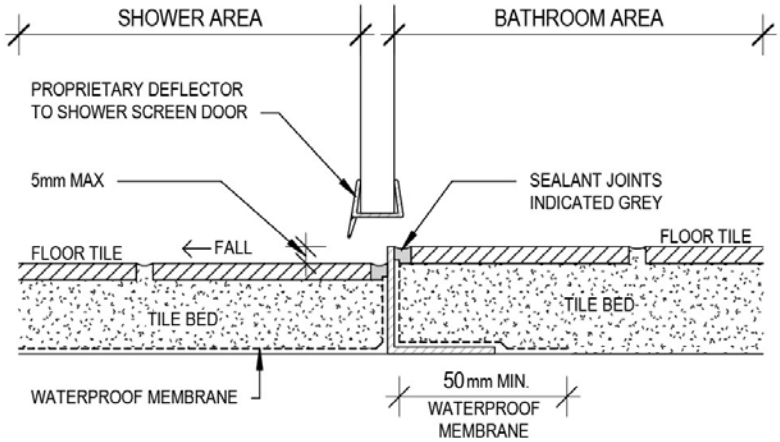


Figure A4(5)(a)

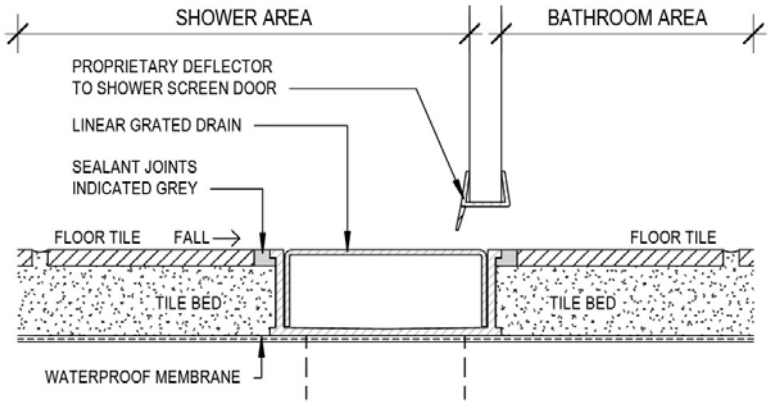
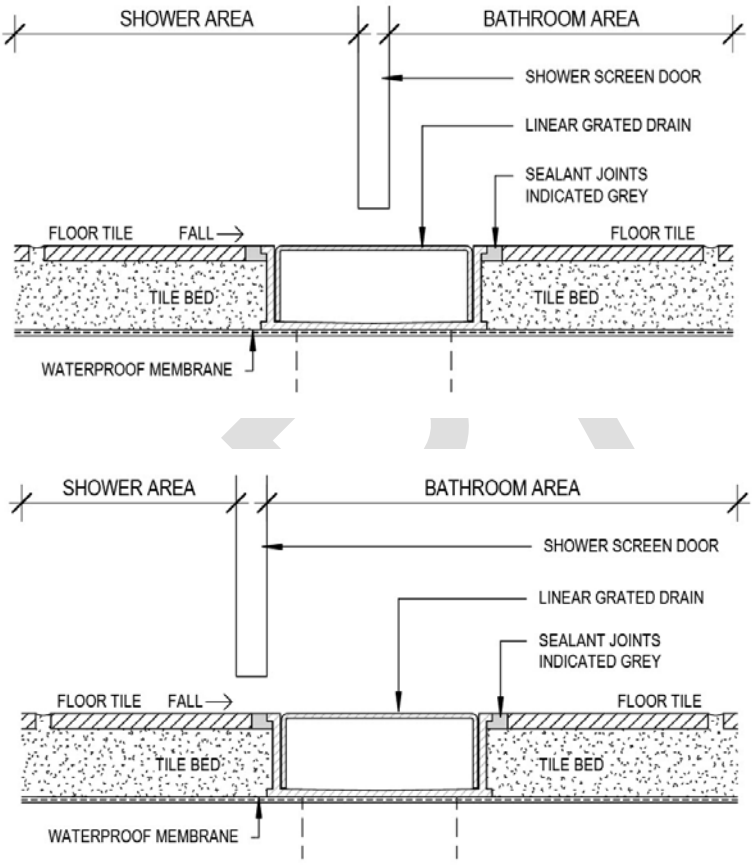


Figure A4(5)(b)



Source:
Queensland Development Code – Mandatory Part 4.5 – Livable dwellings and grading to floor wastes.

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