

Ministerial Building Standard MBS 013

Application of NCC modern homes provisions to existing Class 1 buildings

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**Government of
South Australia**

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 specifies **energy efficiency** and **livable housing design** deemed-to-satisfy provisions for new building work to existing Class 1 dwellings to support compliance with the requirements of the National Construction Code (NCC) modern homes provisions where assessment is difficult due to the disparity between existing and new standards of construction.

To address this anomaly, MBS 013 defines 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*. In addition, guidance is provided on acceptable practices that can be used to meet these performance standards.

13A1A2 Structure

MBS 013 adopts a clause numbering system similar to that 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 | 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 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 and a reference to a dwelling 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) Unless stated otherwise, a reference to a dwelling includes any attached Class 10a part that has a conditioned space.

- (5) Figures 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) Specification 01 sets out the method for use of *house energy rating software*.
- (7) Tables referenced in Part 1.2 (Building fabric) are provided in Schedule 1.
- (8) Definitions, symbols and abbreviations are provided in Schedule 2.
- (9) Referenced documents are listed in Schedule 3. A reference in MBS 013 to a document refers to the edition or issues and any amendment listed in Schedule 3.
- (10) Explanatory information on the energy efficiency provisions and the livable housing design provisions are provided in the Appendices.
- (11) Words in *italics* must be interpreted in accordance with definitions provided in Schedule 1, unless a contrary intention appears.

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 NCC 2022: Part A5 that shows the use of a material, product, form of construction or design meets the relevant *Performance Requirements*.
 - (b) Expert Judgement.
 - (c) 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 NCC 2022: Part A5 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 Documentation of design and construction

13A3A1 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).

13A3A2 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

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 do not preclude absolute compliance with the NCC 2022 Energy Efficiency provisions.

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: 13B2D1 and 13B2D2.

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 Deemed-to-Satisfy

13B2D1 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: 13B2D2.
- (2) Where a *Performance Solution* is proposed, the relevant *Performance Requirements* must be determined in accordance with MBS 013: 13A2A2 and 13A2A4 as applicable.

13B2D2 Application

- (1) *Performance Requirement* MBS 013: 13B1P1 for thermal performance is satisfied for:
 - (a) *alterations* by complying with MBS 013: B2D3 (Energy Efficiency Provisions).
 - (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 the ABCB Housing Provisions: Section 13 (Energy Efficiency), or
 - (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: 1.2.1 (Building fabric thermal insulation – materials and installation).
 - (B) MBS 013: 1.2.2(5) (Roofs and ceilings), MBS 013: 1.2.4(3) (External walls), and MBS 013: 1.2.5(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: 1.2.5(2) (Floors and suspended floors) for floor edge insulation.
 - (E) MBS 013: Part 1.4 (Building sealing) for building sealing.
 - (F) MBS 013: Part 1.5 (Whole of Home energy usage).
 - (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 ABCB Housing Provisions: Section 13 (Energy Efficiency), or
 - (ii) MBS 013: Section B (Energy Efficiency).
- (2) *Performance Requirement* MBS 013: 13B1P2 (Energy usage) for the energy usage of an *alteration*, *addition* or *addition & alteration* is applicable when all domestic services are being replaced, and is satisfied by:

- (a) complying with MBS 013: Parts 1.5 (Whole-of-home energy usage) and 1.6 (Services), or
- (b) complying with ABCB Housing Provisions: Parts 13.6 (Whole-of-home energy usage) and 13.7 (Services) for a dwelling with a total floor area not greater than 500 m².

13B2D3 Energy Efficiency Provisions

Part 1.1 Scope and application

1.1.1 Application

- (1) An *alteration* that creates a *conditioned space* or affects an existing *conditioned space* in an existing dwelling must be in accordance with MBS 013: Section B (Energy efficiency).
- (2) 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: 1.2.1, and
 - (ii) sealing the addition in accordance with MBS 013: Part 1.4 (Building Sealing).
- (3) 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: 1.2.1,
 - (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).

Part 1.2 Building fabric

1.2.1 Building fabric thermal insulation installation

- (1) Thermal insulation installation to an *alteration*, *addition* or *addition & alteration* must be in accordance with ABCB Housing Provisions: 13.2.2 (Building fabric thermal insulation) except the thermal barrier is not required to extend into the unaltered part of the building.
- (2) Where access to the existing dwelling is restricted, compliance with ABCB Housing Provisions: 13.2.2 (Building fabric thermal insulation) shall be to the extent possible without demolition of any part of the existing dwelling.

1.2.2 Roofs and ceilings

- (1) A roof *alteration* or roof sheet replacement to an existing dwelling that has an area greater than 50% of the existing roof must:
 - (a) have thermal insulation installed to the entire roof/ceiling area, that achieves a minimum *R-Value* in accordance with MBS 013: Table 1.2.2a or Table 1.2.2b, and

- (b) where installed, have reflective insulation complying 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.
- (2) Where existing ceiling linings are to be replaced in a *conditioned space* of an *alteration*, the new ceiling must have insulation in accordance with ABCB Housing Provisions: Part 13.2 (Building fabric) or MBS 013: Table 1.2.2a or Table 1.2.2b.
- (3) A framed roof and ceiling to an *addition* must have roof and ceiling insulation in accordance with ABCB Housing Provisions: Part 13.2 (Building fabric) or MBS Table 1.2.2a or Table 1.2.2b.
- (4) Ceiling insulation required by MBS 013: 1.2.2 in an *alteration* is not required to be installed in accordance ABCB Housing Provisions: Part 13.2 (Building fabric) or MBS Table 1.2.2a or Table 1.2.2b if access to the ceiling space is not possible without removal of the roof sheets.
- (5) Where roof and ceiling insulation is required by MBS 013: 1.2.2 and the roof or ceiling is steel framed and subject to thermal bridging, thermal breaks must be installed in accordance with ABCB Housing Provisions: 13.2.3(3), (4) and (7).
- (6) Where ceiling insulation required by MBS 013: 1.2.2 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 ABCB Housing Provisions: Table 13.2.3w.
- (7) Where the ceiling insulation required by MBS 013: 1.2.2 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*.
- (8) 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 roof or ceiling is uninsulated, have roof and ceiling insulation in accordance with ABCB Housing Provisions 2022 Part 13.2 or MBS 013: Table 1.2.2a or Table 1.2.2b.

1.2.3 Roof lights

- (1) A roof light installed as part of an *alteration*, *addition* or *addition & alteration* must be in accordance with ABCB Housing Provisions: 13.2.4 (Roof lights).

1.2.4 External walls

- (1) Where an *alteration* in an existing or new *conditioned space* requires the removal and replacement of the internal linings of the external wall, the thermal performance of the affected part of the external wall must be in accordance with MBS 013: Part 1.2.4 (External walls).
- (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 1.2.4a or Table 1.2.4d as applicable.
 - (b) in climate zone 5, have wall insulation that achieves the minimum R-value in accordance with MBS 013: Table 1.2.4b and 1.2.4e as applicable.
 - (c) in climate zone 6, have wall insulation that achieves the minimum R-value in accordance with MBS 013: Table 1.2.4c and 1.2.4f as applicable.

- (3) Where wall insulation is required by MBS 013: 1.2.4(2) and the wall framing material is metal 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: 1.2.4 (External walls), the masonry walling must remain weatherproof in accordance with NCC 2022: Part 5.7 (Weatherproofing of masonry).
- (5) Where an *alteration*, *addition* or *addition & alteration* has a *roof overhang* that is required to match that of the existing dwelling, and the roof overhang exceeds roof overhang limits in the relevant MBS 013: Tables 1.2.4a-f, the highest allowed *R-value* may be used for the appropriate *solar absorptance* and wall height
- (6) For the purposes of MBS 013, the shading of a wall by a Class 10 building or structure may be disregarded when determining the added external wall thermal insulation.
- (7) 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: 1.2.4 (External walls).

1.2.5 Floors and suspended floors

- (1) *Alterations* to existing floors that are:
 - (a) concrete slab-on-ground, or
 - (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 underneath the slab.
- (3) A new suspended framed floor or new flooring laid over an existing suspended framed floor that is over an unenclosed space in an *addition* or *addition & alteration*:
 - (a) in *climate zone* 6, must have thermal insulation with a minimum *R-Value* of
 - (i) R 4.0, or
 - (ii) R 3.5 if used in conjunction with a reflective airspace.
 - (b) in *climate zones* 4 and 5, is not required to have added underfloor insulation.
- (4) Where an *addition* or an *alteration & addition* requires the installation of thermal floor insulation and the sub-floor height exceeds the upper limit in MBS 013: Tables 1.2.5a-f due to the required increased subfloor heights in flood-prone areas, the *R-value* for an 1800 mm sub-floor height may be used.
- (5) An *alteration* that includes a new suspended framed floor or new flooring laid over an existing suspended framed floor that is over an enclosed sub-floor space in an *addition* or *addition & alteration*, must achieve the minimum *R-Value* required by:
 - (a) ABCB Housing Provisions: Part 13.2.6 (Floors and subfloor walls), or
 - (b) MBS 013: Tables 1.2.5d-f as applicable.

- (6) Where an existing dwelling has an *alteration* that exceeds 50% of the original dwelling's floor area and has:
- (a) an uninsulated suspended framed floor over an unenclosed space or over an enclosed subfloor space, and
 - (b) an accessible space between the floor joists without removing linings or undertaking demolition of any kind,
- the unaltered part must have thermal insulation installed to with MBS: 013 1.2.5(3) to the extent that is allowed by the available access to the existing suspended floor framing.
- (7) New insulation to an *addition* or *addition & alteration* installed between metal sub-floor framing is subject to thermal bridging and must be addressed by achieving the total *R-value* in MBS 013: Table 1.2.5g.

Part 1.3 External glazing

1.3.1 External glazing generally

- (1) Where an *addition*, *alteration* or *alteration & addition* includes replacing or additional *external glazing*:
- (a) replaced or additional *external glazing* must have a thermal performance in accordance with ABCB Housing Provisions: Part 13.3 (External glazing), and
 - (b) the *addition* or the *alteration & addition* is required to be thermally isolated from the remainder of the dwelling in accordance with MBS 013: 1.1.1.
- (2) Subject to the concessions allowed in MBS 013: 1.3.1(3) and (4), the required thermal performance of the *external glazing* in each storey must:
- (a) be assessed by calculating the required theoretical thermal performance of all *external glazing* in accordance with NCC 2022: Part 13.3 (External glazing), and
 - (b) applying the calculated complying thermal performance to all additional or replaced *external glazing*.
- (3) Where compliance with the 'Winter Outcomes' aggregate conductance of the external glazing is prevented by shading of existing north-facing verandahs, carports and other shading elements, the shading by that shading element may be disregarded and the shading of the *roof overhang* may be used.
- (4) Where:
- (a) north *sector external glazing* has an area that is less than 1 m² or less than 1% of the floor area, whichever is the greater, or
 - (b) there is no north *sector external glazing*,
- and the external glazing thermal performance cannot be met by MBS 013: 1.3.1(2), all glazing (existing and new) in the storey is not required to comply with the 'Winter Outcomes' aggregate conductance of the glazing.

1.3.2 Shading

- (1) In determining the *external glazing* thermal performance in accordance with MBS 013: 1.3.1, the shading of the glazing by the *roof overhang* shall be in accordance with the requirements of the relevant calculation method used in MBS 013: 1.3.1(2).

- (2) For the purposes of MBS 013, the shading of the *external glazing* by an external permanent projection or an external shading device or Class 10 building or structure may be disregarded when determining the *external glazing* thermal performance.

Part 1.4 Building sealing

1.4.1 Building sealing

- (1) A *conditioned space* or *habitable room* in an *addition* or *addition & alteration* must be sealed by sealing any:
- chimneys or flues,
 - roof lights,
 - windows and doors,
 - exhaust fans,
 - construction of ceilings, walls, and floors, and
 - evaporative coolers
- in accordance with ABCB Housing Provisions: Part 13.4 (Building sealing).
- (2) Where the unaltered part of an existing dwelling with an *addition* or *addition & alteration* is not sealed, 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: 1.1.1(3).
- (3) 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.

Part 1.5 Whole-of-home energy usage

1.5.1 Whole-of-home energy usage

- (1) An *alteration*, *addition* or *addition & alteration* to a dwelling must comply with ABCB Housing Provisions: Part 13.6 (Whole-of-home energy usage) and Part 13.7 (Services) when all *domestic services* are being replaced.
- (2) Compliance with ABCB Housing Provisions: Part 13.6 (Whole-of-home energy usage) and Part 13.7 (Services) is not required when there is partial or no replacement of *domestic services*.

Part 1.6 Services

1.6.1 Services

- (1) New services to an *alteration*, *addition* or *addition & alteration*, including:
- Insulation of services,
 - Central heating water piping,
 - Heating and cooling ductwork,
 - Electric resistance space heating system,
 - Artificial lighting,

- (f) Water heater in a heated water supply system ,
- (g) Swimming pool heating and pumping, and
- (h) Spa heating and pumping

must be in accordance with ABCB Housing Provisions: Part 13.7 (Services).

Part 1.7 Relocated Dwelling

1.7.1 Relocated dwelling

- (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 apply 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 1.2.4 (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 1.2.2 (Roofs and ceilings).
 - (c) Where the sub-floor space to the underside of the floor is not accessible, and there is no proposed removal of floor linings, there is no requirement to comply with MBS 013: Part 1.2.5 (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 013: 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).
 - (i) Concessions detailed in Ministerial Building Standard MBS 007: South Australia Part H6 Energy Efficiency – Concessions may apply.

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* or *repairs* to an existing Class 1a dwelling.

13C1P1 Livable housing design

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

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 *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 Dwelling access

2.1.1 Step-free access path

- (1) Unaltered parts of an existing dwelling are not required to comply with MBS 013 Part 2.1.
- (2) Where an *alteration*, *addition* or *addition & alteration* incorporates a new:
 - (a) access path to the dwelling entrance, or
 - (b) pedestrian entry at the allotment boundary (or alters an existing pedestrian entry) from ground level of the adjoining land, or
 - (c) Class 10a garage or carport, or
 - (d) carparking space provided for the exclusive use of occupants of the dwelling

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 1.1 (Step-free access path),

- (3) MBS 013: 2.1.1(2) is not applicable if
- (a) step-free access via a garage, carport or parking space in accordance with MBS 013:2.1.1(2) is not provided, and
 - (b) one or more of the following conditions exist:
 - (i) the average slope of the ground on which the access path would be constructed exceeds a gradient of 1:14.
 - (ii) to provide an external step-free access path would necessitate construction of ramping that exceeds the length and gradient allowed by ABCB LHD Standard Clause 1.1(4).
 - (iii) there is insufficient space available on the site on which to construct a step-free access path complying with ABCB LHD Standard Clause 1.1.
 - (iv) the difference in level, measured vertically from the pedestrian entry at the allotment boundary or parking space to the entrance door on the nearest floor containing habitable rooms, would necessitate construction of ramping that exceeds the length and gradient allowed under ABCB LHD Standard Clause 1.1(4).

2.1.2 Parking space incorporated into step-free access path

- (1) Unaltered parts are not required to comply with MBS 013: 2.1.2.
- (2) Where an *addition* or *addition & alteration* incorporates a new parking space that is connected to or forms part of a required access path to a MBS 013: Part 2.2 compliant dwelling entrance, it must be constructed in accordance with ABCB LHD Standard Clause 1.2 (Parking space incorporated into step-free access path), unless the existing dwelling has a compliant carparking space connected to a step free access path to an existing MBS 013: Part 2.2 compliant dwelling entrance.
- (3) MBS 013: 2.1.2(2) is not applicable if:
- (a) the exemptions under MBS 013: 2.1.1(3) apply, or
 - (b) there is insufficient space available on the site on which to construct a suitable parking space that complies with ABCB LHD Standard Clause 1.2(1)(a), or
 - (c) there is insufficient space available to access a compliant step-free access path from the vehicle in a compliant parking space.

Part 2.2 Dwelling entrance

2.2.1 Dwelling entrance generally

- (1) Where a dwelling entrance is connected to a step-free access path, an *entrance door* complying with MBS Part 2.2 must be designated and be in accordance with MBS 013: 2.2.2.
- (2) An entrance door in an *alteration*, *addition* or *addition & alteration* is not required to comply with MBS 013: Part 2.2 if there is an existing *entrance door* that complies.
- (3) Unaltered parts are not required to comply with MBS 013: Part 2.2.

2.2.2 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 820 mm in accordance with ABCB LHD Standard Clause 2.1 (Clear opening width).
- (2) An *alteration* to a dwelling entrance is not required to comply with MBS 013: 2.2.2(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: 2.2.2 (1), or
 - (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: 2.2.2 (1), or
 - (c) there is a different external *entrance door* (existing or proposed by the *alteration, addition or addition & alteration*) that is or will be compliant with MBS 013: Part 2.2.

2.2.3 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: 2.2.3(2).
- (2) The threshold of an entrance door that is subject to MBS 013: 2.2.1 must:
 - (a) be level, or
 - (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 450 mm.
- (3) Where thresholds in accordance with (2) cannot meet requirements of MBS 013: 2.2.5, external entrance doors containing a raised door or sill must not have:
 - (a) a lip or upstand greater than 15 mm within the sill profile, and
 - (b) more than 5 mm height difference between the edge of the top surface of the sill and the adjoining finished surface.
- (4) An *alteration* that includes an alteration to a dwelling entrance is not required to comply with MBS 013: 2.2.3(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.

2.2.4 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: 2.2.2 and a threshold in accordance with

MBS 013: 2.2.3, 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: 2.2.4(1) is not available, the landing area shall be made as large as practicable.

2.2.5 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 step-free entrance).

Part 2.3 Internal doors and corridors

2.3.1 Internal doors and corridors generally

- (1) Unaltered parts are not required to comply with MBS 013: Part 2.3.
- (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, or
 - (b) an attached class 10a garage or carport that forms part of the access path to an *entrance door* required by MBS 013: 2.2.1, or
 - (c) a *sanitary compartment* on the ground floor that complies with the ABCB LHD Standard, or
 - (d) a room containing a *shower* that complies with the ABCB LHD Standard
- must have a minimum clear opening width accordance with MBS 013: 2.3.2 and a threshold in accordance with MBS 013: 2.3.3.
- (3) An *alteration*, *addition* or an *addition & alteration* that incorporates a new corridor that is connected to a door that connects to or is in a path of travel to areas listed in (2)(a)-(d), must comply with MBS 013: 2.3.4.
- (4) An *alteration* that includes a new internal door that connects to or is in a path of travel to areas listed in (2)(a)-(d), must have a minimum clear opening width in accordance with MBS 013: 2.3.2 and a threshold in accordance with MBS 013: 2.3.3.
- (5) An unaltered existing corridor or part of an existing corridor is not required to be comply with MBS 013: 2.3.4.
- (6) 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.

2.3.2 Clear opening width

- (1) Where required by MBS 013: 2.3.1, internal doorways must provide a minimum clear opening width of 820 mm in accordance with ABCB LHD Standard Clause 3.1 (Clear opening width).

2.3.3 Threshold

- (1) Where required by MBS 013: 2.3.1, an *alteration*, *addition* or *addition & alteration* that incorporates a new internal door complying with MBS 013 2.3.2 must have a threshold that:
 - (a) is level, or
 - (b) has a sill height not more than 5 mm if the lip is rounded or bevelled, or
 - (c) has a ramped threshold that:
 - (i) does not extend internally beyond the depth of the door jamb, and
 - (ii) has a gradient not steeper than 1:8, and
 - (iii) is at least as wide as the minimum clear opening width of the entrance door, and
 - (iv) does not intrude into the minimum dimensions of a landing area that is required by MBS 013: 2.2.4.
- (2) MBS 013: 2.3.3(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.

2.3.4 Corridor width

- (1) Where required by MBS 013: 2.3.1, an *alteration*, *addition* or *addition & alteration* must have a minimum clear width of 1000 mm in accordance with ABCB LHD Standard 3.3 (Corridor width).
- (2) MBS 013: 2.3.4(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: 2.3.2 (1) (a)-(d), is existing and is less than the required 1000 mm width.

Part 2.4 Sanitary compartment

2.4.1 Sanitary compartments generally

- (1) Where there are no compliant *sanitary compartments*, a new *sanitary compartment* included in an *alteration*, *addition* or *addition & alteration* must be located on either:
 - (a) the ground floor or entry level, or
 - (b) the lowest level containing a *habitable room* within the Class 1a dwelling.
- (2) A new *sanitary compartment* must comply with MBS 013: Part 2.4.
- (3) Unaltered parts are not required to comply with MBS 013: Part 2.4.

2.4.2 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) Where an *alteration* to a *sanitary compartment* increases the floor area of the *sanitary compartment* to the extent that the circulation spaces required in ABCB LHD Standard Clause 4.2 (Circulation space) can be met, the circulation space must be in accordance with ABCB LHD Standard Clause 4.2 (Circulation space).

2.4.3 Compliant sanitary compartment

- (1) A compliant *sanitary compartment* is a *sanitary compartment* that:

- (a) is located on the ground or entry floor, or on the lowest level containing a *habitable room*, within the Class 1a dwelling, and
 - (b) has circulation spaces in accordance with MBS 013: 2.4.2
- (2) An existing bathroom containing a water closet pan that has circulation spaces in accordance with MBS 013: 2.4.2 is a compliant *sanitary compartment*.

Part 2.5 Shower

2.5.1 Shower generally

- (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: 2.5.1(1):
 - (a) an *alteration* to a shower that removes existing floor and wall tiles or requires modifications to the shower floor area, or
 - (b) relocates sanitary waste plumbing to suit revised sanitary fixture locations, or
 - (c) an *addition* or *addition & alteration* that includes a bathroom, must include a *shower* with a hobless and step free entry that complies with MBS 013: 2.5.2
- (3) Unaltered parts are not required to comply with MBS 013: Part 2.5.

2.5.2 Hobless and step free entry

- (1) Where a shower is required to have a hobless and step-free entry,
 - (a) an *enclosed shower area* must have a:
 - (i) water bar with a maximum height of 5 mm installed above and sealed to the waterstop at the shower area entry, or
 - (ii) linear drain at the shower area entry.
 - (b) an *unenclosed shower area* must comply with AS 3740 or ABCB Housing Provisions: Part 10.2 (Wet area waterproofing).
- (2) *Enclosed shower areas* and *unenclosed shower areas* that are hobless and step-free must be waterproofed in with AS 3740 or ABCB Housing Provisions: Part 10.2 (Wet area waterproofing).
- (3) Figures of hobless and step-free showers that incorporate a shower screen door have been provided in Appendix B for informative purposes only.

Part 2.6 Reinforcement of bathroom and sanitary compartment walls

2.6.1 Reinforcement of bathroom and sanitary compartment walls generally

- (1) An addition or addition & alteration that contains a:
 - (a) *sanitary compartment* that is subject to MBS 013: Part 2.4, or
 - (b) bathroom containing a shower that is subject to MBS 013: Part 2.5, or
 - (c) bath (not being a freestanding bath) that is in a room containing a *shower* that is subject to MBS 013: Part 2.5

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 *alteration* to an existing:
- (a) sanitary compartment that is subject to MBS 013: Part 2.4, or
 - (b) bathroom containing a shower that is subject to MBS 013: Part 2.5, or
 - (c) bath (not being a freestanding bath) that is in a room containing a shower that is subject to MBS 013: Part 2.5

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 2.6.1(1) and (2) are not required to be complied with if the walls of the room are constructed of concrete, masonry or another material capable of supporting grabrails without additional reinforcement.

2.6.2 Construction

- (1) Wall reinforcing constructed in an *alteration*, *addition* or *addition & alteration* in accordance with MBS 013: 2.6.1 must be:
- (a) provided in locations shown in ABCB LHD Standard Part 6.2 (Construction), and
 - (b) constructed using materials in accordance with ABCB LHD Standard Part 6.2 (Construction).

Part 2.7 Relocated Dwelling

2.7.1 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). Concessions detailed in MBS 007: South Australia Part H8 Livable housing design - Concessions may apply.

Specification 01 House energy rating software

S01C1 Application

- (1) *House energy rating software* may be used with an *addition* or *addition & alteration* when the floor area of an existing dwelling 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 (SR_r) is calculated using the area of the existing unaltered portion of the dwelling (A_e), the assessed star rating of the existing dwelling (SR_e), the area of the new addition (A_n), and the NCC required star rating of the new addition (SR_n).
- (2) *Addition* to an existing dwelling with no *alteration* work, the formula used is

$$SR_r = \frac{(A_e \times SR_e) + (A_n \times SR_n)}{(A_e + A_n)}$$

Where:

- (a) **SR_e** is the assessed NatHERS star rating of the existing dwelling (without the *addition*) and must be calculated using any NatHERS accredited *house energy rating software*.
 - (b) **SR_n** is the required NCC 2022 NatHERS star rating for new *addition* (7 stars).
 - (c) **A_e** is the existing unaltered area (measured to inside of external walls).
 - (d) **A_n** is the total area of new *addition* work (measured to inside of external walls).
- (3) For the purposes of the S01C3 formula,
 - (a) the star rating of the existing dwelling shall be assessed using the existing building prior to any internal alteration or removal of external walls but after any removal of attached rooms to be demolished (i.e. attached, or enclosed verandah, or sunroom or the like), and
 - (b) 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.

S01C4 Calculation of adjusted star rating for additions and alterations

- (1) The adjusted star rating (SR_r) is calculated using the area of the existing unaltered portion of the dwelling (A_e), the assessed star rating of the existing dwellings (SR_e), the area of the new *addition* (A_n), and the NCC required star rating of the new *addition* (SR_n).

- (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 assessed NatHERS star rating of the existing dwelling after any required demolition (without the *addition*) and must be calculated using any NatHERS accredited *house energy rating software*.
 - (b) **SRn** is the required 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) the star rating of the existing dwelling shall be assessed using the existing building prior to any internal alteration or removal of external walls but after any removal of attached rooms to be demolished (i.e. attached, or enclosed verandah, or sunroom or the like), and
 - (b) 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
 - (c) 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*.

Schedule 1 – Tables

Table 1.2.2a Pitched roof with horizontal ceiling – minimum R-Value for ceiling insulation: climate zone 4, 5 and 6.

| Climate Zone | Roof ventilation | Solar Absorptance | Under roof insulation R-Value | R-Value |
|--------------|-------------------------------------|-------------------|-------------------------------|---------|
| 4 | NO reflective insulation under roof | | | |
| | Standard | Any | ≤ 0.5 | 3.5 |
| | Standard | Any | > 0.5 | 3.0 |
| | Vented | Any | Any | 3.5 |
| | Reflective insulation under roof | | | |
| | Standard | Any | Any | 3.0 |
| | Vented | Any | ≤ 0.5 | 3.5 |
| | Vented | Any | > 0.5 | 3.0 |
| 5 | NO reflective insulation under roof | | | |
| | Standard | Any | ≤ 0.5 | 3.0 |
| | Standard | Any | > 0.5 to < 2.0 | 2.5 |
| | Standard | Any | ≥ 2.0 | 3.0 |
| | Vented | Any | < 2.0 | 3.0 |
| | Vented | Any | ≥ 2.0 | 2.5 |
| | Reflective insulation under roof | | | |
| | Standard | Any | Any | 2.5 |
| | Vented | Any | < 0.5 | 3.0 |
| Vented | Any | ≥ 0.5 | 2.5 | |
| 6 | NO reflective insulation under roof | | | |
| | Standard | Any | < 1.0 | 4.0 |
| | Standard | Any | ≥ 1.0 | 3.5 |
| | Vented | Any | < 1.0 | 3.0 |
| | Vented | Any | ≥ 1.0 | 2.5 |
| | Reflective insulation under roof | | | |
| | Standard | Any | < 1.0 | 3.5 |
| | Standard | Any | ≥ 1.0 | 3.0 |
| | Vented | Any | < 1.0 | 3.0 |
| Vented | Any | ≥ 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 1.2.2b 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.
- (2) The *R-Value* of reflective insulation is not to be included in the *R-Value* of any under-roof or ceiling insulation.
- (3) *R-Values* listed are for the labelled, declared *R-Value* of insulation.

Table 1.2.4a: Climate Zone 4 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

| Solar Absorptance (SA) | | SINGLE STOREY (<i>R-Value</i>) | | | | TWO OR MORE STOREYS (<i>R-Value</i>) | | | |
|---|------------------|----------------------------------|--------|-------|--------|--|--------|-------|--------|
| | | ≤ 0.5 | | > 0.5 | | ≤ 0.5 | | > 0.5 | |
| Wall height (m) | | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m |
| MASONRY VENEER (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| | > 0 to ≤ 300 | 2.0 | 2.5 | 2.0 | 2.5 | 2.5 | 3.0 | 2.5 | 2.7 |
| | > 300 to ≤ 450 | 2.0 | 2.5 | 2.0 | 2.5 | 2.5 | 2.7 | 2.5 | 2.7 |
| | > 450 to ≤ 600 | 2.0 | 2.5 | 2.0 | 2.5 | 2.5 | 2.7 | 2.5 | 3.0 |
| | > 600 to ≤ 900 | 2.5 | 2.5 | 2.0 | 2.5 | 2.7 | 2.7 | 2.5 | 3.0 |
| | > 900 to ≤ 1200 | 2.5 | 2.5 | 2.5 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| | > 1200 to ≤ 1500 | 2.7 | 2.7 | 2.7 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| CAVITY MASONRY (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 0.25 | 0.51 | 0.25 | 0.51 | 0.5 | 0.76 | 0.50 | 0.76 |
| | > 0 to ≤ 300 | 0.25 | 0.51 | 0.25 | 0.51 | 0.5 | 0.76 | 0.50 | 0.76 |
| | > 300 to ≤ 450 | 0.51 | 0.51 | 0.25 | 0.51 | 0.76 | 0.76 | 0.50 | 0.76 |
| | > 450 to ≤ 600 | 0.51 | 0.51 | 0.25 | 0.51 | 0.76 | 0.76 | 0.50 | 0.76 |
| | > 600 to ≤ 900 | 0.62 | 0.62 | 0.51 | 0.62 | 0.87 | 0.87 | 0.76 | 0.87 |
| | > 900 to ≤ 1200 | 1.08 | 0.75 | 0.62 | 0.75 | 1.33 | 1.0 | 0.87 | 1.0 |
| | > 1200 to ≤ 1500 | 1.44 | 1.08 | 1.08 | 1.08 | 1.69 | 1.33 | 1.33 | 1.33 |

Table Notes

- (1) Masonry Veneer two+ storey *R-values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.
- (2) Cavity Masonry two+ storey *R-Values* are single storey cavity masonry wall *R-Values* with NCC R 0.25 two-storey loading.
- (3) *R-Values* are for the labelled, declared *R-Value* of the insulation.
- (4) Wall heights are for single storey construction.

Table 1.2.4b: Climate Zone 5 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

| Solar Absorptance (SA) | | SINGLE STOREY (R-Value) | | | | TWO OR MORE STOREYS (R-Value) | | | |
|--|------------------|-------------------------|--------|-------|--------|-------------------------------|--------|-------|--------|
| | | ≤ 0.5 | | >0.5 | | ≤ 0.5 | | >0.5 | |
| | | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m |
| MASONRY VENEER (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 | 2.5 |
| | > 0 to ≤ 300 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 |
| | > 300 to ≤ 450 | 1.5 | 2.0 | 1.5 | 2.0 | 2.0 | 2.5 | 2.0 | 2.5 |
| | > 450 to ≤ 600 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 |
| | > 600 to ≤ 900 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 | 2.5 |
| | > 900 to ≤ 1200 | 2.0 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 | 2.5 |
| | > 1200 to ≤ 1500 | 2.5 | 2.5 | 2.7 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| CAVITY MASONRY (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 0.0 | 0.25 | 0.0 | 0.0 | 0.25 | 0.5 | 0.25 | 0.25 |
| | > 0 to ≤ 300 | 0.0 | 0.25 | 0.0 | 0.25 | 0.25 | 0.5 | 0.25 | 0.5 |
| | > 300 to ≤ 450 | 0.25 | 0.25 | 0.0 | 0.25 | 0.5 | 0.5 | 0.25 | 0.5 |
| | > 450 to ≤ 600 | 0.25 | 0.25 | 0.25 | 0.25 | 0.5 | 0.5 | 0.5 | 0.5 |
| | > 600 to ≤ 900 | 0.25 | 0.25 | 0.25 | 0.25 | 0.5 | 0.5 | 0.5 | 0.5 |
| | > 900 to ≤ 1200 | 0.25 | 0.25 | 0.25 | 0.25 | 0.5 | 0.5 | 0.5 | 0.5 |
| | > 1200 to ≤ 1500 | 0.51 | 0.51 | 0.51 | 0.51 | 0.76 | 0.76 | 0.76 | 0.76 |

Table Notes

- (1) Masonry Veneer two+ storey R-values are single storey lightweight wall R-Values with NCC R 0.5 two-storey loading.
- (2) Cavity Masonry two+ storey R-Values are single storey cavity masonry wall R-Values with NCC R 0.25 two-storey loading.
- (3) R-Values are for the labelled, declared R-Value of the insulation.
- (4) Wall heights are for single storey construction.

Table 1.2.4c: Climate Zone 6 – External masonry veneer and cavity masonry walls – minimum R-Value of added insulation

| Solar Absorptance (SA) | | SINGLE STOREY (R-Value) | | | | TWO OR MORE STOREYS (R-Value) | | | |
|--|------------------|-------------------------|--------|-------|--------|-------------------------------|--------|-------|--------|
| | | ≤ 0.5 | | >0.5 | | ≤ 0.5 | | >0.5 | |
| | | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m |
| MASONRY VENEER (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 2.0 | 2.0 | 2.5 | 2.4 | 2.5 | 2.5 | 2.7 | 2.7 |
| | > 0 to ≤ 300 | 2.5 | 2.4 | 2.7 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| | > 300 to ≤ 450 | 2.7 | 2.4 | 2.7 | 2.5 | 2.7 | 2.7 | 2.7 | 2.7 |
| | > 450 to ≤ 600 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 |
| | > 600 to ≤ 900 | x | x | x | x | x | x | x | x |
| | > 900 to ≤ 1200 | x | x | x | x | x | x | x | x |
| | > 1200 to ≤ 1500 | x | x | x | x | x | x | x | x |
| CAVITY MASONRY (R-Value of added insulation) | | | | | | | | | |
| Overhang (mm) | 0 | 0.62 | 0.75 | 0.51 | 0.62 | 1.12 | 1.25 | 1.01 | 1.12 |
| | > 0 to ≤ 300 | 0.75 | 1.08 | 0.62 | 0.75 | 1.25 | 1.58 | 1.12 | 1.25 |
| | > 300 to ≤ 450 | 1.08 | 1.08 | 0.75 | 1.08 | 1.58 | 1.58 | 1.25 | 1.58 |
| | > 450 to ≤ 600 | 1.08 | 1.08 | 1.08 | 1.08 | 1.58 | 1.58 | 1.58 | 1.58 |
| | > 600 to ≤ 900 | 1.44 | 1.44 | 1.44 | 1.44 | 1.94 | 1.94 | 1.94 | 1.94 |
| | > 900 to ≤ 1200 | x | x | x | x | x | x | x | x |
| | > 1200 to ≤ 1500 | x | x | x | x | x | x | x | x |
| | > 1500 to ≤ 1800 | x | x | x | x | x | x | x | x |

Table Notes

- (1) Masonry Veneer two+ storey *R-values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.
- (2) Cavity Masonry two+ storey *R-Values* are single storey cavity masonry wall *R-Values* with NCC R 0.25 two-storey loading.
- (3) *R-Values* are for the labelled, declared *R-Value* of the insulation.
- (4) Wall heights are for single storey construction.
- (5) A reference to 'x' means not permitted.

Table 1.2.4d: Climate Zone 4 – External walls – lightweight construction – minimum R-Value of added insulation

| Solar Absorptance (SA) | | SINGLE STOREY (R-Value) | | | | TWO OR MORE STOREYS (R-Value) | | | |
|------------------------|------------------|-------------------------|--------|-------|--------|-------------------------------|--------|-------|--------|
| | | ≤ 0.5 | | >0.5 | | ≤ 0.5 | | >0.5 | |
| Wall height (m) | | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m | ≤ 2.7 | > 2.7m |
| Overhang (mm) | 0 | 2.7 | 2.7 | 2.7 | 2.7 | 3.3 | 3.2 | 3.2 | 3.2 |
| | > 0 to ≤ 300 | 2.3 | 2.7 | 2.3 | 2.7 | 2.5 | 3.2 | 2.7 | 3.2 |
| | > 300 to ≤ 450 | 2.3 | 2.7 | 2.3 | 2.7 | 2.7 | 3.2 | 2.7 | 3.2 |
| | > 450 to ≤ 600 | 2.3 | 2.7 | 2.3 | 2.7 | 2.7 | 3.2 | 2.7 | 3.2 |
| | > 600 to ≤ 900 | 2.7 | 2.7 | 2.3 | 2.7 | 3.2 | 3.2 | 2.7 | 3.2 |
| | > 900 to ≤ 1200 | 2.7 | 2.7 | 2.7 | 2.7 | 3.2 | 3.2 | 3.3 | 3.2 |
| | > 1200 to ≤ 1500 | 2.7 | 2.7 | 2.7 | 2.7 | 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 NCC R 0.3 Lightweight construction loading.
- (3) Two+ storey *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

Table 1.2.4e: Climate Zone 5 – External walls – lightweight construction – minimum R-Value of added insulation

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

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 NCC R 0.3 Lightweight construction loading.
- (3) Two+ storey *R-Values* are single storey lightweight wall *R-Values* with NCC R 0.5 two-storey loading.

Table 1.2.4f: Climate Zone 6 – External walls – lightweight construction – minimum R-Value of added insulation

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

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 NCC R 0.3 Lightweight construction loading.
- (3) Two+ storey R-Values are single storey lightweight wall R-Values with NCC R 0.5 two-storey loading.
- (4) A reference to 'x' means not permitted.

Table 1.2.5a: Climate Zone 4 – minimum R-Value of suspended floor insulation (over an enclosed space) without subfloor wall insulation

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| >600 to ≤1500 | 0.0 | 1.5 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 to ≤1500 | 0.0 | 1.5 |
| >1500 to ≤1800 | 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.

Table 1.2.5b: Climate Zone 5 – minimum R-Value of suspended floor insulation (over an enclosed space) without subfloor wall insulation

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| >600 to ≤900 | 0.0 | 1.5 |
| >900 to ≤1500 | 0.0 | 2.0 |
| >1500 to ≤1800 | 0.0 | 2.5 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 to ≤1500 | 0.0 | 2.0 |
| >1500 to ≤1800 | 0.0 | 2.5 |

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.

Table 1.2.5c: Climate Zone 6 – minimum R-Value of suspended floor insulation (over an enclosed space) without subfloor wall insulation

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| ≤600 to ≤1200 | 0.0 | 2.0 |
| >1200 to ≤1800 | 0.0 | 2.5 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 | 0.0 | 1.5 |
| >600 to ≤900 | 0.0 | 2.0 |
| >900 to ≤1500 | 0.0 | 1.5 |
| >1500 to ≤1800 | 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.

Table 1.2.5d: Climate Zone 4 – minimum R-Value of floor and subfloor insulation (over an enclosed subfloor space)

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| ≤600 | 0.5 | 1.0 |
| | 1.0 | 0.5 |
| >600 to ≤900 | 0.0 | 1.5 |
| | 1.5 | 0.5 |
| >900 to ≤1200 | 0.0 | 1.5 |
| | 0.5 | 1.0 |
| >1200 to ≤1500 | 0.0 | 1.5 |
| >1500 to ≤1800 | 0.5 | 1.5 |
| | 1.0 | 1.0 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 | 0.0 | 1.5 |
| | 0.5 | 1.0 |
| | 2.0 | 0.5 |
| >600 to ≤900 | 0.0 | 1.5 |
| | 0.5 | 1.0 |
| >900 to ≤1200 | 0.5 | 1.0 |
| | 2.0 | 0.5 |
| >1200 to ≤1500 | 0.0 | 1.5 |
| >1500 to ≤1800 | 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.

Table 1.2.5e: Climate Zone 5 – minimum R-Value of floor and subfloor insulation (over an enclosed subfloor space)

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| ≤600 to ≤900 | 0.0 | 1.5 |
| >900 to ≤1500 | 0.0 | 2.0 |
| >1500 to ≤1800 | 0.5 | 2.0 |
| | 0.0 | 2.5 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 to ≤1500 | 0.0 | 2.0 |
| >1500 to ≤1800 | 0.5 | 2.0 |
| | 0.0 | 2.5 |

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.

Table 1.2.5f: Climate Zone 6 – minimum R-Value of floor and subfloor insulation (over an enclosed subfloor space)

| Subfloor height (mm) | Minimum subfloor wall insulation R-value | Minimum suspended floor insulation R-Value |
|--|--|--|
| NO reflective insulation facing down over subfloor space | | |
| ≤600 | 0.0 | 2.0 |
| >600 to ≤900 | 0.0 | 2.0 |
| >900 to ≤1200 | 0.0 | 2.0 |
| >1200 to ≤1500 | 0.0 | 2.5 |
| | 0.5 | 2.0 |
| >1500 to ≤1800 | 0.0 | 2.5 |
| Reflective insulation facing down over subfloor space | | |
| ≤600 | 0.0 | 1.5 |
| >600 to ≤900 | 0.0 | 1.5 |
| >900 to ≤1200 | 0.0 | 1.5 |
| >1200 to ≤1500 | 0.0 | 1.5 |
| >1500 to ≤1800 | 0.0 | 2.0 |
| | 0.5 | 1.5 |

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.

Table 1.2.5g: Metal-framed suspended floor – thermal bridging mitigation

| Floor insulation R-value with direction of heat flow | Option 1 specified R-value | Option 2 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) Option 1 – increase insulation between floor framing to specified *R-value*.
- (2) Option 2 – add layer of continuous insulation product above or below floor framing with specified *R-Value*
- (3) Minimum *R-values* are in-situ values, which account for compression of insulation.

Schedule 2 – 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.

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 provide 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.

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 3 – Referenced documents

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

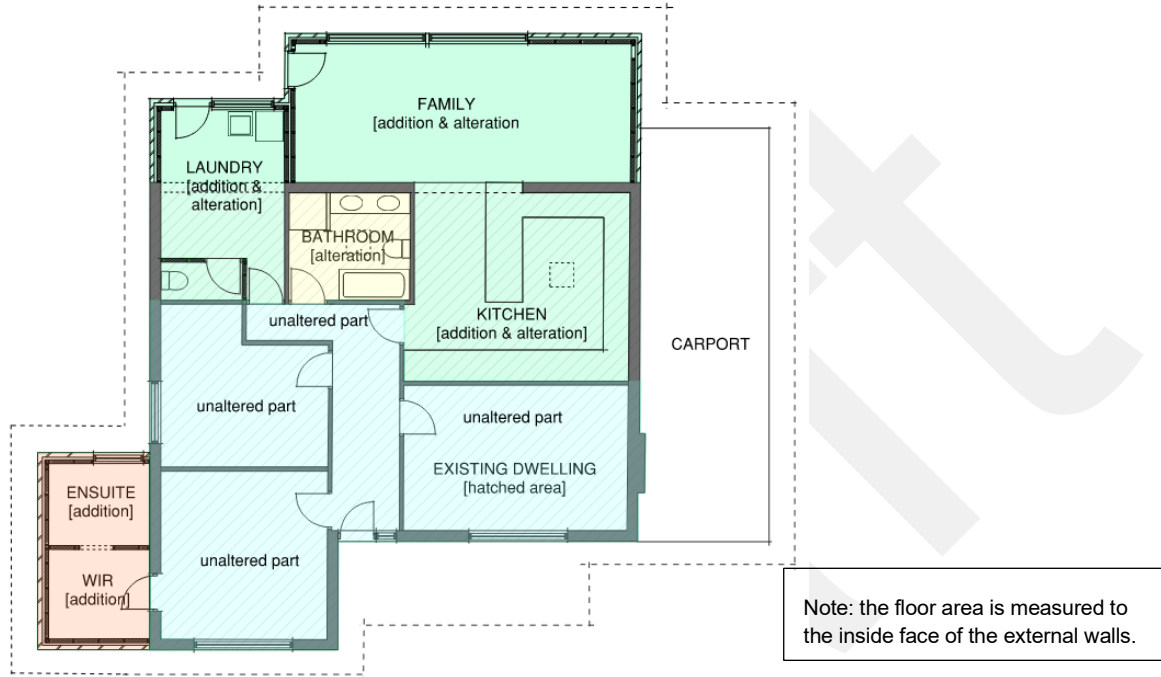
Table C1.1 – Schedule of referenced standards and documents

| Number | 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 |
| 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 – Energy Efficiency (informative)

Area Calculation for 13B2D2 Application

Example calculation for the increase in the floor area of the *habitable rooms*:



| | | 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 m²

Total area of habitable rooms in the addition = Family Room = 27 m²

Percentage increase is 36%.

Thermal barrier

The internal wall separating an *addition* and the unaltered part or an *addition & alteration* creates the thermal barrier that isolates the new work from the existing dwelling.

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

Thermal insulation in ceilings

Upgrading ceiling insulation in an existing dwelling that has a low-pitched roof with minimal ceiling space and no ceiling space can require the removal of roof sheets, however it 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.

Thermal insulation in external walls

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.

External glazing

MBS 013 does not require the replacement of any unaltered existing *windows*. However, replacing *windows* with higher performing frames and glazing or re-glazing *windows* with better performing energy efficient glass, double glazing or high-performance thermal coating will improve the dwelling's energy efficiency.

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. (add general note about existing not required)

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 Glass and Window Association (AGWA), Window Energy Rating Scheme (WERS). AGWA manages and updates the WERS, which is available at www.wers.net.

Assessing the external glazing by following the elemental deemed-to-satisfy provisions of either NCC 2019 or ABCB Housing Provisions 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.

Building sealing

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

Relocated Dwellings

The relocation of an existing dwelling from one allotment to another allotment requires Planning and Building Consent. Other applicable Planning Code and Building Code matters must be considered, such as compliance with applicable Ministerial Building Standards and Australian Standards, including MBS 003 – Fire safety in caravan parks and residential parks, MBS 008 Designated bushfire prone areas – additional requirements, AS 4055 – Wind loads for housing, AS 1288 – Glass in buildings – selection and location and AS 3959 – Construction of buildings in bushfire prone areas.

Whole-of-home energy usage

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*. 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.

Where it is proposed to upgrade individual *domestic services*, the energy efficiency of 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.

House energy rating software

Assessing the energy efficiency of an *alteration* and/or *addition* using *house energy rating software* designed for new dwellings is not an NCC 2022 deemed-to-satisfy solution. It is included in MBS 013 as a deemed-to-satisfy solution but limited to an *addition* that increases the floor area of the *habitable rooms* of an existing dwelling 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.

The use of *house energy rating software* to demonstrate compliance for an *addition* and the *addition* part of any *addition & alteration* that increases the floor area of the *habitable rooms* of an existing dwelling by more than 50% is not compliant with this MBS.

Calculation of adjusted star rating for additions and alterations

An example of the use of the formula for adjusted star rating for **additions only (no alterations)** – the required star rating for the existing building plus the addition is **4.4 stars**.

$$SR_r = \frac{(A_e \times SRe) + (A_n \times SR_n)}{(A_e + A_n)}$$

| SR _r | Total Star rating required | 4.4 | | | |
|---------------------------------|--|-------|----------------------------------|---|------------|
| A _e | Existing unaltered area | 102 | A _n | Area of new additions | 27 |
| SRe | NatHERS star rating of existing dwelling | 3.2 | SR _n | NCC 2022 NatHERS star rating for the new addition | 7 |
| A _e x SRe | 102 x 3.2 | 326.4 | A _n x SR _n | 27 x 7 | 189 |
| A _e + A _n | 75 + 42 | 117 | SR_r | (326.4 + 189) / 117 | 4.4 |

An example of the use of the formula for adjusted star rating for **additions and internal alterations** – the required star rating for the existing building plus the addition and alterations is **5.4 stars**.

$$SR_r = \frac{[(A_e - A_{ni}) \times SRe] + [(A_n + A_{ni}) \times SR_n]}{(A_e + A_n)}$$

| SR _r | Total Star rating required | 5.4 | | | |
|---|---|-------|---|---|------------|
| A _e | Existing unaltered area | 102 | A _n | Area of new additions | 42 |
| A _{ni} | Area of alterations (within curtilage of existing building) | 41 | SR _n | NCC 2022 NatHERS star rating for new addition | 7 |
| SRe | NatHERS star rating of existing dwelling | 3.2 | | | |
| A _e – A _{ni} | 102 - 41 | 63 | A _n + A _{ni} | 42 + 41 | 83 |
| (A _e – A _{ni}) x SRe | 63 x 3.2 | 201.6 | (A _n + A _{ni}) x SR _n | 83 x 7 | 581 |
| A _e + A _n | 102 + 42 | 144 | SR_r | (201.6 + 581) / 144 | 5.4 |

Appendix B – Livable Housing Design (informative)

Step-free access path

The exemptions listed at MBS 013: 2.1.1(3) provide for situations where the ramping necessary to provide a step-free access path would become too lengthy or too steep to be used regularly by a person with limited mobility, and therefore would offer little benefit to dwelling occupants or visitors.

Such situations may occur due to a number of factors including (but not limited to) the following:

- The slope of the land upon which the ramp would be constructed. For example, if the required step-free access path cannot be provided in one continuous direction, meaning it would instead need to be cut into the slope, or would run back and forth across the face of the slope, in order to stay within maximum gradient limits.
- The height of the lowest floor containing *habitable room* is too high to be reached by a ramp within *required* length and gradient limits. Floor heights can be influenced by factors such as dwelling style, *defined flood level*, location of the dwelling in an *alpine area*, or construction of the dwelling directly above a *private garage* (including garage-top dwellings).
- The amount of available space on the *site* is insufficient to accommodate a step-free access path. This may be due to the physical size of the *site*, or regulations outside of the NCC which limit the proportion of a *site* that can be covered by structures and/or impervious ground coverings.

It is important to note that under MBS 013: 2.1.1(3), an exemption may only be applied if, in a particular case, both (a) and (b) are applicable, not just one or the other.

Even if ABCB LHD Standard Clause 1.1 is not complied with, all other relevant provisions of the ABCB LHD Standard must still be complied with.

Clear opening width

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.

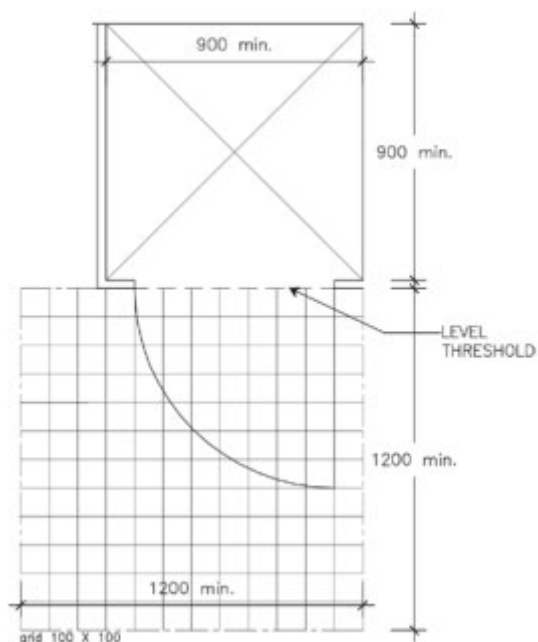
Weatherproofing for external entrance

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 1200 mm x 1200 mm landing area if the landing area is not under an existing verandah or 1200 mm eaves.

Hobless and step free entry

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.

Shower hobless and step-free entry details

Figures A1, A2 and A3 illustrate hobless and step-free showers that incorporate a water bar and a shower screen door with a proprietary door seal.

Figures A4, A5 and A6 illustrate hobless and step-free showers that incorporate a linear grated drain and a shower screen door without a proprietary door seal.

Figures A1 to A6 are for informative purposes only.

Figure A1

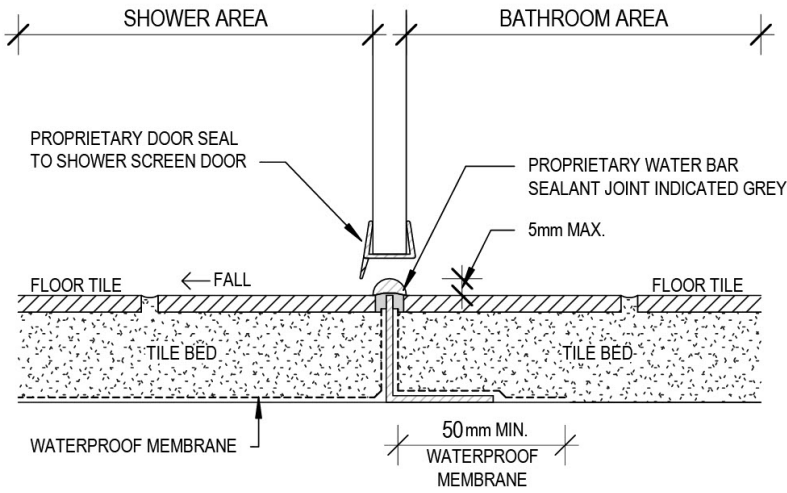


Figure A2

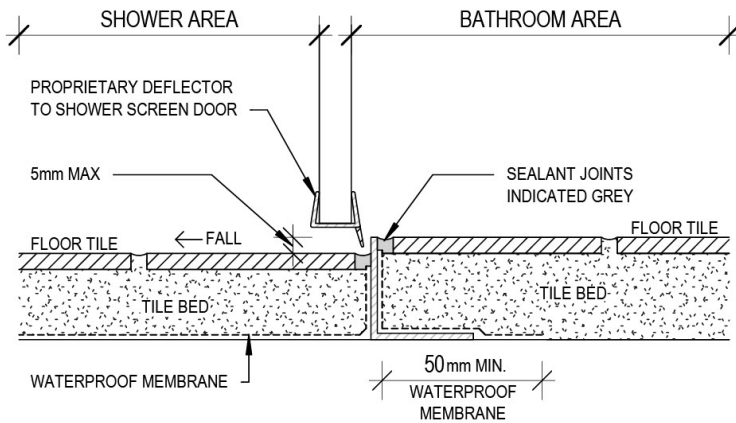


Figure A3

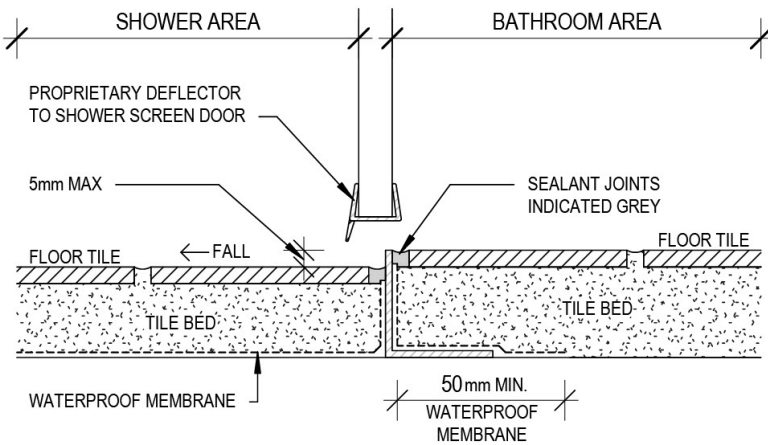


Figure A4

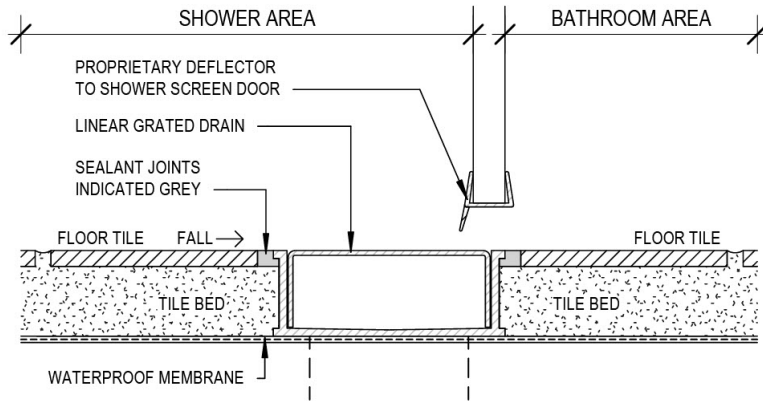


Figure A5

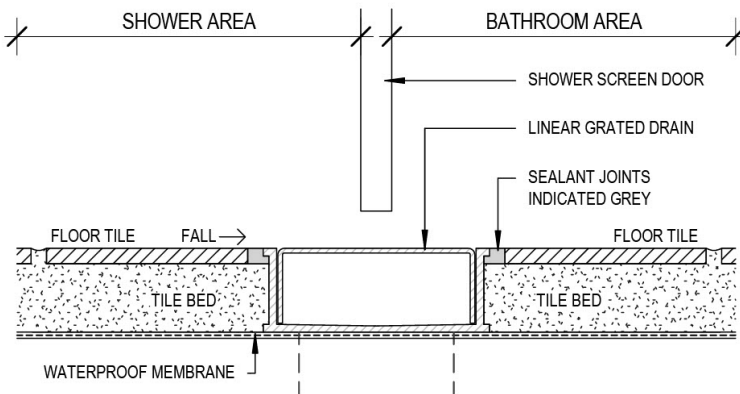
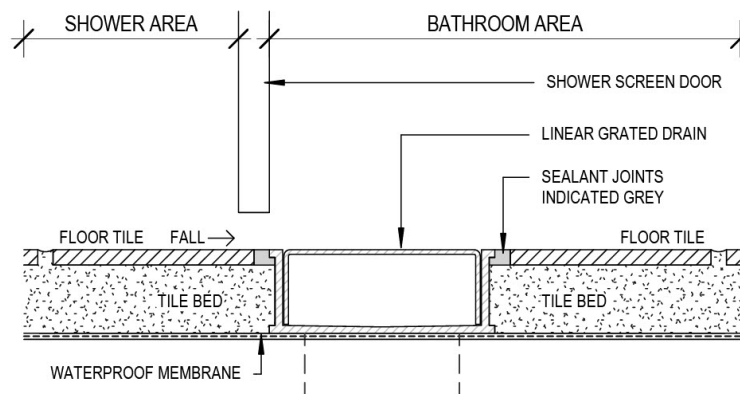


Figure A6



Source:

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

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