Queensland Government

Guideline for Queensland Development Code MP 4.1

Sustainable buildings

Guideline to support interpretation and implementation

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Contents

Scope

This guideline explains how to apply Queensland Development Code Mandatory Part 4.1–Sustainable buildings (QDC 4.1).

QDC 4.1 forms part of Queensland's building assessment provisions and includes requirements for the sustainability performance of buildings, including energy efficiency. It provides Queensland-specific variations, concessions and compliance pathways.

Purpose of guideline

This guideline assists practitioners and homeowners with understanding and applying QDC 4.1.

It explains Queensland's residential energy efficiency requirements, available compliance pathways and Queensland-specific variations.

This guideline is not intended to address every possible scenario. Anyone undertaking building work should obtain appropriate advice from appropriately qualified professionals which is relevant to their circumstances.

This guideline updates and supersedes Building and Plumbing Newsflash 628 (22 May 2024) and Building and Plumbing Newsflash 548 (updated 12 June 2020).

Legal status of these guidelines

This document is a statutory guideline made under section 258 of the *Building Act 1975* (BA) to assist with compliance with the Act and the application of QDC 4.1. Building certifiers are required under section 133A of the BA to have regard to guidelines made under section 258 when performing a function under the Act.

This document is intended to assist practitioners and homeowners to understand and apply QDC 4.1. It does not replace, vary or add to any requirement of the BA, the Building Regulation 2021 or QDC 4.1.

Where there is any inconsistency between this document and a legislative requirement, the legislative requirement prevails.

Queensland's approach

Queensland supports homes that are comfortable, energy efficient and fit for modern living.

QDC 4.1 includes Queensland-specific variations and additional compliance pathways that respond to local climates, housing designs and building practices. These provisions maintain energy efficiency outcomes while providing practical and cost-effective options for industry and new homeowners.

The Queensland Government has provided this guidance to improve clarity, support consistent decision-making and make the requirements easier to apply.

The guidance reflects technical improvements to the Modern Homes Standards that:

- provide greater clarity
- improve compliance efficiency
- support productivity
- promote practical and cost-effective construction outcomes
- maintain energy efficiency outcomes
- maintain the objectives of the Modern Homes standards.

Key benefits of Queensland's approach

The key benefits of QDC 4.1 are it:

- supports comfortable and energy-efficient homes
- helps reduce household energy use
- provides flexible compliance pathways
- recognises Queensland's climate and lifestyle
- supports traditional Queensland housing forms
- provides tailored pathways for small homes and houses with raised floor construction
- reduces unnecessary compliance burden
- maintains equivalent energy efficiency outcomes

Background

Residential energy efficiency standards help maintain comfortable indoor temperatures throughout the year and reduce reliance on air-conditioning for cooling and heating. This can improve liveability and lower household energy costs.

On 1 May 2024, Queensland adopted the NCC 2022 residential energy efficiency provisions. The provisions apply to:

- houses and townhouses (class 1 buildings)
- sole-occupancy units in apartment buildings (class 2 buildings).

At the same time, Queensland updated QDC 4.1 to address Queensland-specific circumstances.

For example, Queensland makes optional outdoor living area credits available across all four Queensland climate zones (see Figure 1). This recognises the important role outdoor living areas can play in Queensland homes and provides greater design flexibility while maintaining equivalent energy efficiency outcomes. Residential energy efficiency standards improve occupant comfort throughout the year so the temperature of the home during the day and overnight can reduce reliance on air-conditioning, including for hot summers and cooler winters. They improve liveability and can minimise energy bills.

QDC 4.1 also includes sustainability requirements not contained in the NCC, such as end-of-trip facilities for larger commercial buildings, shopping centres, tertiary education facilities and hospitals.

Renovations to existing homes

Most renovations to the existing part of a home will be exempt from, or only minimally affected by QDC 4.1. Queensland's approach recognises the practical realities of renovating existing homes and includes exemptions, concessions and building certifier discretion to avoid unreasonable outcomes.

Minor works will generally not trigger the requirements, such as:

- kitchen refurbishments
- bathroom renovations
- replacing cupboards and vanities
- replacing floor coverings
- open-plan conversions
- routine repairs and maintenance

For larger renovations, requirements primarily apply to the new building work. Existing parts of the home remain subject to consideration of practicality and reasonable outcomes by the building certifier.

For more details on how these provisions may apply to a home renovation, refer to the *Guideline for Modern Homes Standards – Home Renovations*.

Transitional arrangements

When building assessment provisions change, such as those in a QDC, a building certifier may apply the previous building assessment provisions in force immediately before the change. This is permitted under section 37 of the *Building Act 1975*.

For more details on how transitional arrangements apply to building applications, refer to the *Guideline for applying transitional arrangements when building requirements change*.

Residential energy efficiency

The NCC residential energy efficiency provisions apply to:

- houses and townhouses (Class 1 buildings)
- sole-occupancy units in apartment buildings (Class 2 buildings).

QDC 4.1 includes variations and additional compliance pathways that support the practical application of these provisions in Queensland.

The residential energy efficiency requirements are:

i. **Thermal performance (star rating)** of the dwelling's building shell (roof, walls, windows and floor), which must achieve:
   - 7 stars for most houses and townhouses
   - 5 stars for small homes under QDC 4.1
   - 6 stars for houses with raised floor construction under QDC 4.1.

   QDC 4.1 also provides a climate zone 5 compliance pathway for houses with a floor over an unenclosed space.

   The thermal performance standard promotes passive design features such as optimal house orientation and room layout, insulation, ventilation, shading, window design, ceiling fans and lighter-coloured roofs and external wall finishes.

ii. **Whole of home** energy budget to assess the energy efficiency of the dwelling’s major fixtures and appliances, which includes air-conditioners, hot water systems, artificial lighting and pool/spa pumps, and any onsite renewable energy system, such as solar photovoltaic (PV).

   A minimum score for whole of home is required depending on the dwelling’s building class:
   - 60 (out of 100) for a house or townhouse (class 1 buildings)
   - 50 (out of 100) for each sole-occupancy unit in an apartment building (class 2).

When using the NatHERS pathway, there is a relationship between a home's thermal performance (star rating) and its whole of home score. Improving the thermal performance of the building shell generally reduces the dwelling's heating and cooling energy demand, which can improve its whole of home score. This relationship does not apply in the same way when using the elemental (DtS) whole of home pathway, which is assessed separately using the NCC Online Calculator.Typical compliance pathways.

Two assessment pathways can typically be used to demonstrate compliance with the residential energy efficiency requirements, either with a software tool or the elemental (deemed-to-satisfy (DtS)) provisions.

A key principle underpinning the NCC residential energy efficiency provisions is that all compliance options aim to offer an equivalent level of performance.

Thermal performance (star rating)

i. NatHERS software

Software is the most common compliance method used for residential energy efficiency. There are four software tools accredited under the Nationwide House Energy Rating Scheme (NatHERS) Software Accreditation Protocol that are available for use by house energy assessors:

- AccuRate Home
- BERS Pro
- FirstRate5
- Hero.

Software tools are used under license by house energy assessors, and each are trained in their preferred one as they have a different user-interface.

The software assesses the dwelling's proposed design for the thermal performance of its building shell (roof, walls, windows and floor) and generates a star rating (and the whole of home energy budget).

Information from the dwelling's house plans is used as input for the software to predict the amount of cooling and heating based on its design and specifications. The star rating generated will depend on the dwelling's location (climate) and orientation, construction materials and its passive design features. Software allows for flexible design options and different building features can be emphasised. For example, a higher level of insulation can be used to offset a darker-coloured roof (that attracts heat) in hotter areas while potentially still achieving a 7-star rating.

Results of the software assessment are provided on a NatHERS Certificate or report (see Figure 2), which shows its star rating (out of 10) for the building shell.

The NatHERS Certificate or report for the dwelling's plans must be submitted with the building development application to demonstrate it complies with the required residential energy efficiency standard.

Associated NCC energy efficiency requirements when using software

When software is used for demonstrating compliance for the star rating (thermal comfort), associated elemental (DtS) requirements apply for other energy saving features such as thermal breaks, compensation for a loss of ceiling insulation, floor edge insulation and building sealing.

For details, refer to BCA Volume Two, clause S42C4–Additional Deemed-to-Satisfy Provisions when using house energy rating software for compliance purposes.

ii. Elemental (DtS) provisions

The elemental (DtS) assessment pathway is a more prescriptive approach used for compliance of the dwelling's design compared to software. The elemental (DtS) provisions for residential energy efficiency are contained in NCC, which set out specific requirements for each aspect of the building shell in the relevant climate zone, and these vary to account for climatic differences. The provisions cover the range of specific energy efficiency elements such as orientation, building fabric and external glazing.

The elemental (DtS) provisions are:

- for houses and townhouses (class 1 buildings):
  - NCC Volume Two, section H6D2(1)(b) for thermal performance and section H6D2(2)(b) for whole of home; or
  - QDC 4.1, section A1(2) for thermal performance, combined with NCC Volume Two, section H6D2(2)(b) for whole of home.
- for sole-occupancy units in an apartment building (class 2 buildings):
  - NCC Volume One, section J2D2(2)(b) for thermal performance and section J2D2(3)(a)(i), (b) and (c) for whole of home.

Floor insulation level for houses in NCC climate zone 5 (warm temperate)

As a variation to the NCC, QDC 4.1 provides an elemental (DtS) compliance option for houses (class 1 buildings) with an unenclosed floor in NCC climate zone 5 (Toowoomba-Darling Downs region).

In conjunction with relevant elemental (DtS) provisions for climate zone 5 (ABCB Housing Provisions Standards, Parts 13.2, 13.3, 13.4 and 13.5), QDC 4.1 prescribes a minimum level of insulation to the floor where the floor is over an unenclosed space. The floor must be insulated with reflective insulation facing down and achieve a minimum R-Value of 2.5. This floor insulation requirement replaces the "X" (not permitted) in Table 13.2.6a of the ABCB Housing Provisions Standards.

Use of optional credits towards the star rating

Compliance with the applicable star standard for the dwelling's building shell can be achieved by using optional credits available under QDC 4.1.

The optional credits apply when a covered outdoor living area (compliant to minimum design specifications under QDC 4.1) is to be included with the dwelling. The credits are available in all four BCA climate zones in Queensland, and are:

- ½ star without a ceiling fan, or
- 1 star with a ceiling fan(s).

For houses and townhouses

When using the optional credits, the house's design must achieve a minimum 'baseline' star rating[1] of 6 stars in all four Queensland climate zones under the NCC (see Figure 1).

For units in an apartment building

Optional credits for compliant outdoor living areas are available only for the purpose of calculating the average star rating of all units in the apartment building. They cannot be used to increase the star rating of an individual unit. For example, a unit with a NatHERS rating of 5 stars remains a 5-star unit, even if it includes a compliant outdoor living area and ceiling fan(s)

Refer to the example in Figure 3 on how to calculate the average star rating for units in an apartment building that has outdoor living areas.

Marketing dwellings higher than 7 stars

The optional credits are provided for regulatory purposes only to assist in complying with the minimum star rating standard. A dwelling cannot be promoted as having more than the star rating standard if those additional stars have relied on optional credits to achieve compliance.

For example, if a house achieves a 7-star building shell rating (as per its NatHERS Certificate or report), the inclusion of a compliant outdoor living area with a ceiling fan (1-star) does not increase its rating to 8 stars for marketing purposes.

If software is used for compliance, the NatHERS Certificate or report only shows the star rating (out of 10) for the proposed design of the dwelling's building shell (roof, walls, windows and floor).

The NatHERS Certificate or report does not include any optional credit(s) for a compliant outdoor living area that may have been used towards achieving compliance with the relevant energy efficiency rating required.

Any optional credits used for compliance need to be separately identified and specified on the house plans.

Outdoor living areas under QDC MP 4.1

For Queensland compliance, QDC MP 4.1 contains the applicable definition, design requirements and

[1] The 'baseline' star rating does not apply to small homes (5-star) and houses with raised floor construction (6-star).

nominal credits for class 1 buildings and sole-occupancy units in class 2 buildings. Practitioners should use the QDC requirements, rather than the separate NCC definition, when determining eligibility for a nominal credit under QDC MP 4.1.

The concessions for a compliant outdoor living area apply regardless of the BCA climate zone the building is located in. Accordingly, a building located in BCA Climate Zone 1, 2, 3 or 5 may receive the applicable nominal credit under A1(9).

Whole of home (energy usage)

The whole of home energy usage budget is used to assess the energy efficiency of the dwelling's major fixtures and appliances including air-conditioner systems, hot water heaters, artificial lighting and pool/spa pumps, as well as any on-site renewable energy e.g. solar photovoltaic (PV) energy system. These features can be designed and installed in all new dwellings, including small homes.

i. NatHERS software

In addition to the star rating of the building shell, NatHERS software can separately assess for a whole of home score (out of 100) based on the dwelling's intended fixtures and appliances, and their respective performance levels. The whole of home score is separately provided on the NatHERS Certificate or report (see Figure 2).

ii. Elemental (DtS) provisions

For an elemental (DtS) assessment of the whole of home energy budget, the Australian Building Codes Board (ABCB) provides a NCC online calculator. It assesses the fixtures and appliances, and their respective performance levels, and deems compliance as a 'pass' or 'fail' only result.

Design process and inclusion of energy efficient features

The energy efficient features proposed to be included with the new dwelling should be discussed early in the design process between the homeowners and project team i.e. building designer/architect, house energy assessor, builder and building certifier. This way all parties will be clear about their cost and the preferred choice of features to be incorporated into the dwelling's final design and construction.

The design inclusions should be shown and specified on the house plans for practitioners and homeowners to provide ease of reference, both now and in the future e.g. for home renovations.

Small homes

Small homes have become increasingly popular in recent years due to their relative affordability and their suitability for a range of housing needs. However, the NCC 2022 residential energy efficiency provisions were not specifically developed with small homes in mind.

Queensland subsequently undertook a technical review of small homes which found that they face challenges in achieving compliance with the 7-star standard in certain NCC climate zones.

Star rating (thermal performance)

Under QDC MP 4.1 A1(3) small homes need only to comply with a 5-star star rating for the building shell. This lower rating recognises the limited ability for small homes to cost-effectively achieve a 7-star rating. The minimum star rating and compliance pathways are:

- **Small homes = 5-stars**

Compliance can be achieved either by:

- 5-star NatHERS only, or
- 4 or 4.5 stars NatHERS combined with the optional credits under QDC 4.1 for inclusion of a compliant outdoor living area (0.5 star if no ceiling fan, or 1 star with ceiling fan)

Compliance can be achieved using the NatHERS pathway only, as there are no contemporary elemental (DtS) provisions available at the 5-star level.

Compliance with the separate whole-of-home energy usage requirement may be demonstrated using either NatHERS software, with a minimum score of 60 out of 100, or the NCC Whole-of-Home Calculator, with a 'Pass' result."

Small homes and outdoor living areas

For the purpose of determining whether a dwelling is a *small home*, *floor area* is measured over the enclosing walls, including the thickness of external and internal walls, and excludes any *outdoor living area*, verandah, roofed terrace, patio, garage or carport in or attached to the building. An *outdoor living area* is treated as the equivalent of a verandah, roofed terrace or patio for this purpose. This reflects the definition of *floor area* adopted by QDC MP 4.1 for a *class* 1 *building*, which is the definition in the *Building Act 1975*.

This differs from the floor area calculated in NatHERS software, which is based on the aggregate area of rooms and excludes wall thicknesses. The NatHERS floor area should not be used to determine whether a dwelling meets the 50 m² small-home threshold.

Houses with raised floor construction

For the purposes of the QDC MP 4.1 A1(4), a house with raised floor construction is defined as a building form in which at least 50% of the total floor area of the building is over an unenclosed space.

The meaning of unenclosed space is generally, a space that is not bounded by a wall or other substantially solid perimeter construction, whether or not the construction incorporates vents, air bricks or other ventilation openings required by the NCC, but may be bounded by battens, lattice, screening or similar construction that allows airflow through the space; or for a space used for car-parking, a space that has at least one side that is permanently open.

However, a space beneath a dwelling may be closed on one or more sides, for example due to the slope of the land, and still be considered unenclosed. The relevant consideration is not whether all sides are open, but whether the space remains substantially open to the external environment. A space that remains open on one or more sides may still experience significant airflow and heat transfer with the external environment in a manner similar to a conventional raised floor. By contrast, a space that is largely bounded by walls, the ground, or other substantially solid perimeter construction is more likely to be considered enclosed.

Star rating (thermal performance)

A house with raised floor construction need only comply with a 6-star star rating for the building shell. This lower rating recognises the limited ability for houses with raised floor construction to cost-effectively achieve a 7-star rating. The minimum star rating and compliance pathways are:

- **Houses with raised floor construction = 6-stars**

Compliance can be achieved either by:

- 6-star NatHERS only, or
- 5 or 5.5 stars NatHERS combined with the optional credits under QDC 4.1 for inclusion of a compliant outdoor living area (0.5 star if no ceiling fan, or 1 star with ceiling fan)

The compliance pathways under A1(4) use NatHERS software for thermal performance. The whole of home energy usage requirements must also be satisfied and may be demonstrated using NatHERS software or the elemental provisions.

Raised floor construction and floor area

For the purpose of determining whether at least 50% of the building's floor area is over an unenclosed space, the calculation of floor area excludes any outdoor living area, verandah, roofed terrace, patio, garage or carport in or attached to the building.

An outdoor living area is treated as the equivalent of a verandah, roofed terrace or patio for this purpose. This reflects the definition of floor area adopted by QDC MP 4.1 for a class 1 building, which is the definition in the Building Act 1975.

Houses in NCC climate zone 5 with an unenclosed floor

QDC MP 4.1 A1(5) provides an additional elemental Deemed-to-Satisfy compliance pathway for a class 1 building in BCA climate zone 5 that has a floor over an unenclosed space.

Modelling undertaken for NCC 2022 did not support including floors over unenclosed spaces in the 7-star elemental Deemed-to-Satisfy provisions for BCA climate zone 5. QDC MP 4.1 addresses this by modifying the floor insulation requirement in Table 13.2.6a and treating a building that uses the modification as achieving thermal performance equivalent to a 6-star NatHERS rating.

For a floor over an unenclosed space, Table 13.2.6a applies as if the “X” for climate zone 5 were replaced by a requirement for “reflective insulation facing down with a minimum R-Value of 2.5”.

The variation applies only to the insulation requirements for the part of the floor that is over an *unenclosed space*. The class 1 building, including any enclosed class 10a building attached to it, must otherwise comply with the applicable requirements of Parts 13.2, 13.3, 13.4 and 13.5 of the ABCB Housing Provisions Standard without modification.

A building does not need to meet the definition of raised floor construction to use this pathway. For example, the pathway may be used where less than 50% of the building’s floor area is over an unenclosed space.

The A1(5) elemental pathway applies only to H6P1. Compliance with H6P2 must be achieved under Parts 13.6 and 13.7 of the ABCB Housing Provisions Standard, using the NCC Whole-of-Home Calculator to obtain a “Pass” result.

Heating and cooling load limits

Under the NCC, dwellings assessed using the NatHERS pathway are generally required to achieve both a minimum star rating and separate heating and cooling load limits.

Small homes and houses with raised floor construction are subject to modified thermal performance requirements under QDC 4.1 and are not required to comply with the separate heating load limit or the separate cooling load limit under the NCC. However, the combined heating and cooling load for the dwelling must still comply with the NCC total thermal energy load limit.

Energy efficiency compliance pathways

For the residential energy efficiency provisions, all new houses and units need to comply with both the applicable star standard and the whole of home energy budget.

Houses and townhouses

The table below shows the combinations of pathway options for houses and townhouses (class 1 buildings) that can be used for compliance.

Compliance pathway options for houses and townhouses

Compliance pathway option	**7-star standard for houses and townhouses**	**Whole of Home energy budget** (using one of the options below)	
		NatHERS software^ Calculated via a NatHERS software tool (minimum score **60 out of 100**)	**Elemental provisions** Calculated via NCC Online Calculator (‘**pass**’ result needed)
1.	**NatHERS software only** (7 stars)	✓	✓
2.	**NatHERS software + compliant outdoor living area (½-star)***	✓	✓

	(6.5 stars + ½ star = 7 stars)		
3.	**NatHERS software + compliant outdoor living area (½-star)* & ceiling fan(s) (½-star)*** (6 stars + 1 star = 7 stars)	✓	✓
4.	**Elemental DtS provisions NCC 2022, Volume Two** (Part H6 Energy efficiency) (7 stars equivalent)	✗ Not applicable	✓
5.	**Elemental DtS provisions NCC 2019, Volume Two** (Part 3.12 Energy efficiency) **+ compliant outdoor living area & ceiling fan(s) (1-star)*** (6 stars equivalent + 1 star = 7 stars)	✗ Not applicable	✓

Compliance pathway option	**5-star standard for small homes (≤50 m² floor area)**	**Whole of Home energy budget** (using one of the options below)	
		NatHERS software^ Calculated via a NatHERS software tool (minimum score **60 out of 100**)	**Whole-of-home under H6P2** Calculated via NCC Online Calculator (‘**pass**’ result needed)
1.	**NatHERS software only** (5 stars)	✓	✓
2.	**NatHERS software + compliant outdoor living area (½-star)*** (4.5 stars + ½ star = 5 stars)	✓	✓
3.	**NatHERS software + compliant outdoor living area (½-star)* & ceiling fan(s) (½-star)*** (4 stars + 1 star = 5 stars)	✓	✓

Compliance pathway option	**6-star standard for houses with raised floor construction**	**Whole of Home energy budget** (using one of the options below)	
		NatHERS software^ Calculated via a NatHERS software tool (minimum score **60 out of 100**)	**Elemental provisions** Calculated via NCC Online Calculator (‘**pass**’ result needed)
1.	**NatHERS software only** (6 stars)	✓	✓
2.	**NatHERS software +**	✓	✓

	compliant outdoor living area (½-star)* (5.5 stars + ½ star = 6 stars)		
3.	**NatHERS software + compliant outdoor living area (½-star)* & ceiling fan(s) (½-star)*** (5 stars + 1 star = 6 stars)	✓	✓

Compliance pathway option	**Houses in NCC climate zone 5 with an unenclosed floor#** (in addition to any other relevant methods above)	**Whole of Home energy budget** (using one of the options below)	
		NatHERS software^ Calculated via a NatHERS software tool (minimum score **60 out of 100**)	**Elemental provisions** Calculated via NCC Online Calculator (‘**pass**’ result needed)
1.	**Elemental DtS provisions NCC 2022, Volume Two** (Part H6 Energy efficiency) (7 stars equivalent)	✗ Not applicable	✓
2.	**Elemental DtS provisions NCC 2019, Volume Two** (Part 3.12 Energy efficiency) **+ compliant outdoor living area & ceiling fan(s) (1-star)*** (6 stars equivalent + 1 star = 7 stars)	✗ Not applicable	✓

^ The NatHERS software tool used for compliance must be the same version that corresponds to its accredited number as shown on this NatHERS page.

* Note: QDC 4.1, section A1(4) makes available optional credits in all four NCC climate zones (1, 2, 3 and 5) across Queensland when a compliant outdoor living area (½-star) and compliant ceiling fan(s) (½-star) is included with the house’s design (unlike the NCC which only applies them in climate zones 1 and 2). The optional credits are provided for regulatory purposes only to assist in complying with the minimum star rating standard. A dwelling cannot be promoted as having more than the star rating standard if those additional stars have relied on optional credits to achieve compliance.

QDC 4.1 prescribes a minimum level of insulation to the floor where the floor is over an unenclosed space for a home in climate zone 5 only. Floor insulation must provide a minimum total R-value of R2.5 and include a reflective surface facing down. This floor insulation requirement replaces the “X” (not permitted) in Table 13.2.6a of the ABCB Housing Provisions Standards.

Units and apartments

The table below shows the combinations of pathway options for sole-occupancy units in an apartment building (class 2) that can be used for compliance.

Compliance pathway options for units in an apartment building

Compliance pathway option	7-star standard for units in apartment buildings	Whole of Home energy budget (using one of the options below)	
		NatHERS software^ Calculated via a NatHERS software tool (minimum score **50 out of 100** for each unit)	**Elemental provisions** Calculated via NCC Online Calculator (‘**pass**’ result needed)
1.	**NatHERS software only** (7-star average for all units in the building, with no single unit to be rated less than 6-stars)	✓	✓
2.	**NatHERS software** (no single unit to be rated less than 6-stars) **+ compliant outdoor living areas (optional credits)***	✓	✓
3.	**Elemental DtS provisions NCC 2022, Volume One** (Section J Energy efficiency)	✗ Not applicable	✓

* Note: QDC 4.1, section A2(2) makes available optional credits in all four NCC climate zones (1, 2, 3 and 5) across Queensland when a compliant outdoor living area (½ star) and ceiling fan(s) (½ star) is included with a unit’s design (unlike the NCC which does not offer any credits for units). The credits can only be used when calculating the average star rating of all units in the building for compliance purposes. They cannot be used for increasing the star rating of an individual unit e.g. from 5 stars to 6 stars for marketing purposes.

^ The NatHERS software tool used for compliance must be the same version that corresponds to its accredited number as shown on this NatHERS page.

Competence to undertake software assessments

Under the Building Regulation 2021 (section 34), a building certifier may decide that an individual is a competent person for a particular aspect of building design or specification. In making this decision, the building certifier must assess the individual's qualifications, experience and skills. A house energy rating assessor may be considered a competent person to undertake energy efficiency assessments for residential dwellings where they have:

i. suitable training and skills
ii. used appropriate assessment practices, and
iii. if applicable, used an approved NatHERS software tool.

Accredited assessor

A house energy rating assessor may be accredited with an Assessor Accrediting Organisation (AAO) and there are three operating in Australia:

i. Australian Building Sustainability Association (ABSA)
ii. Design Matters National (formerly Building Designers Association of Victoria (BDAV))
iii. House Energy Raters Association (HERA).

House energy rating assessors may have completed a Certificate IV in one of the following qualifications:

- Certificate IV in Home Energy Efficiency and Sustainability (course number CPP41119), or
- Certificate IV in NatHERS Assessment (course number CPP41212) – while this course is no longer available, it was formerly required to become an accredited thermal performance assessor.

Accredited assessors are formally recognised as practicing professionals and operate under a Code of Practice. Their software star rating assessments are undertaken in accordance with the current version of the NatHERS Technical Note and are subject to quality assurance reviews by their respective AAO. They are also required to undertake continuing professional development and have professional indemnity insurance.

If an accredited assessor has performed the software assessment, the building certifier can be confident the assessment has been undertaken in accordance with the practice requirements of their AAO.

Non-accredited assessor

If a non-accredited assessor has performed the software assessment, before the building certifier can accept that they are competent, they will need to confirm that the assessor has:

i. Suitable training and skills

If a non-accredited assessor does not hold a Certificate IV qualification as above, the building certifier will need to determine their successful completion of previous software training courses, and relevant assessment skills and experience.

ii. Appropriate assessment practices (NatHERS Technical Note)

The NatHERS Technical Note sets out acceptable industry practice for undertaking software assessments for regulatory purposes.

In determining whether a non-accredited assessor is a competent person to perform the assessment, the building certifier should ensure their work has complied with the current NatHERS Technical Note.

iii. Approved NatHERS software tool

For a non-accredited assessor, the building certifier must be satisfied that the software assessment was undertaken using an accredited NatHERS software tool. The four software tools and their current version numbers are listed shown on this NatHERS page.

NatHERS Certificate

The NatHERS Certificate presents a comprehensive summary of the software assessment in a uniform format regardless of the software tool used. All software tools can produce a NatHERS Certificate or report, which is generated in a fixed file format for record keeping as a .pdf document.

Apart from supporting the building development application, a NatHERS Certificate improves understanding for building practitioners and homeowners about house energy star ratings and the whole of home energy budget. It also allows the energy efficient design elements of the dwelling to be more easily checked at construction and in the future e.g. if undertaking a renovation.

When an accredited assessor performs the software assessment, a NatHERS Certificate is generated in colour and has the NatHERS logo displayed (see Figure 2 for sample certificate). It also identifies:

- their accreditation number and AAO membership
- building design features used and specifications e.g. for windows, walls, floors and roof
- a unique certificate number for validation and a QR code for verification.

When a non-accredited assessor performs the software assessment, a Residential energy rating report is generated in black and white only, and it does not have the NatHERS logo displayed (see Figure 2 for sample report). It also identifies the building design features used and specifications, and has a unique report number and QR code.

More information about the NatHERS Certificate or report, including full samples, are available on the NatHERS website.

When using the NatHERS software pathway, evidence must be in the form of a NatHERS Certificate or a report issued by the software provider's online generation system.

AI tools cannot produce official NatHERS certificates for building approvals. Additionally, there is no ability for assessors to issue self-created certificates or reports.

Other considerations

The matters below also need to be considered when undertaking house energy assessments and associated documentation:

Building Form 15

If the building certifier determines the energy assessor is a competent person, they can accept and rely on a Form 15—Compliance certificate for building design or specification from them.

It is common practice for a building certifier to request a 'Form 15' from the energy assessor to confirm that the dwelling's design complies with the energy equivalence standard, for either the NatHERS software or the elemental (DtS) pathways.

Optional credits

If a compliant outdoor living area is included with the dwelling's design, then these optional credits need to be separately identified and specified on the house plans.

Thermal breaks for metal frames and trusses

Thermal bridging occurs when highly conductive materials, such as steel framing, create a pathway for heat to bypass insulation, reducing the overall thermal performance of the building envelope and potentially increasing energy use and condensation risk.

A thermal break is a material with low thermal conductivity installed between steel framing members and external cladding or roofing to interrupt this heat flow and improve the effectiveness of insulation.

Where the NatHERS software pathway is used, the effects of thermal bridging are incorporated into the energy assessment and may require additional measures, such as thermal breaks or increased insulation, to achieve the applicable performance rating.

Where the elemental (DtS) pathway is used, the NCC and ABCB Housing Provisions prescribe requirements for thermal breaks and other thermal-bridging mitigation measures in steel-framed roof and wall construction.

Stamped plans

For a software assessment, the building certifier needs to confirm the house plans used to generate its energy rating and whole of home energy budget are consistent with the building development application. All relevant design specifications should be noted on the approved and dated plans.

Dwelling plans assessed using the NatHERS software pathway must have the NatHERS Certificate or report's QR code stamp added electronically, along with the date, to all design documentation in accordance with the NatHERS Technical Notes. This includes site and floor plans, elevations and sections, materials documentation, window/skylight/door schedules, electrical plans including lighting and mechanical ventilation, insulation details (location, type and level), appliance schedule, design amendments, and supporting reports.

For elemental (DtS) provisions, the building certifier must ensure that the house plans comply with the applicable energy efficiency requirements of the NCC 2022, which need to align with an energy assessor's report. All relevant design specifications should be clearly detailed on the approved and dated plans.

Variations to house plans

Any variation(s) to the originally approved house plans could compromise the dwelling's compliance with the residential energy efficiency standards, as well as its ongoing energy performance.

If there is a design variation to the dwelling's building shell or change to any assessed fixtures or appliances, its design inclusions will need to be re-assessed. The revised house plans will need to be stamped and dated with the relevant details to confirm compliance.

For software, an updated NatHERS Certificate or report will need to be re-issued. Revisions can be made within the first 12 months of issue at no extra cost.

If the variation is minor and the house energy assessor confirms in writing that the energy assessment will be unaffected, this change may be accepted by the building certifier at their discretion.

Dwelling-specific energy assessment

Each house must be individually assessed for its residential energy star rating and whole of home energy budget, even if using a standard house plan e.g. a project home design. The assessment will account for the property's location, the home's orientation, along with other specific design elements (e.g. roof colour) and fixtures and appliances. All these factors will influence the home's energy performance and occupant comfort.

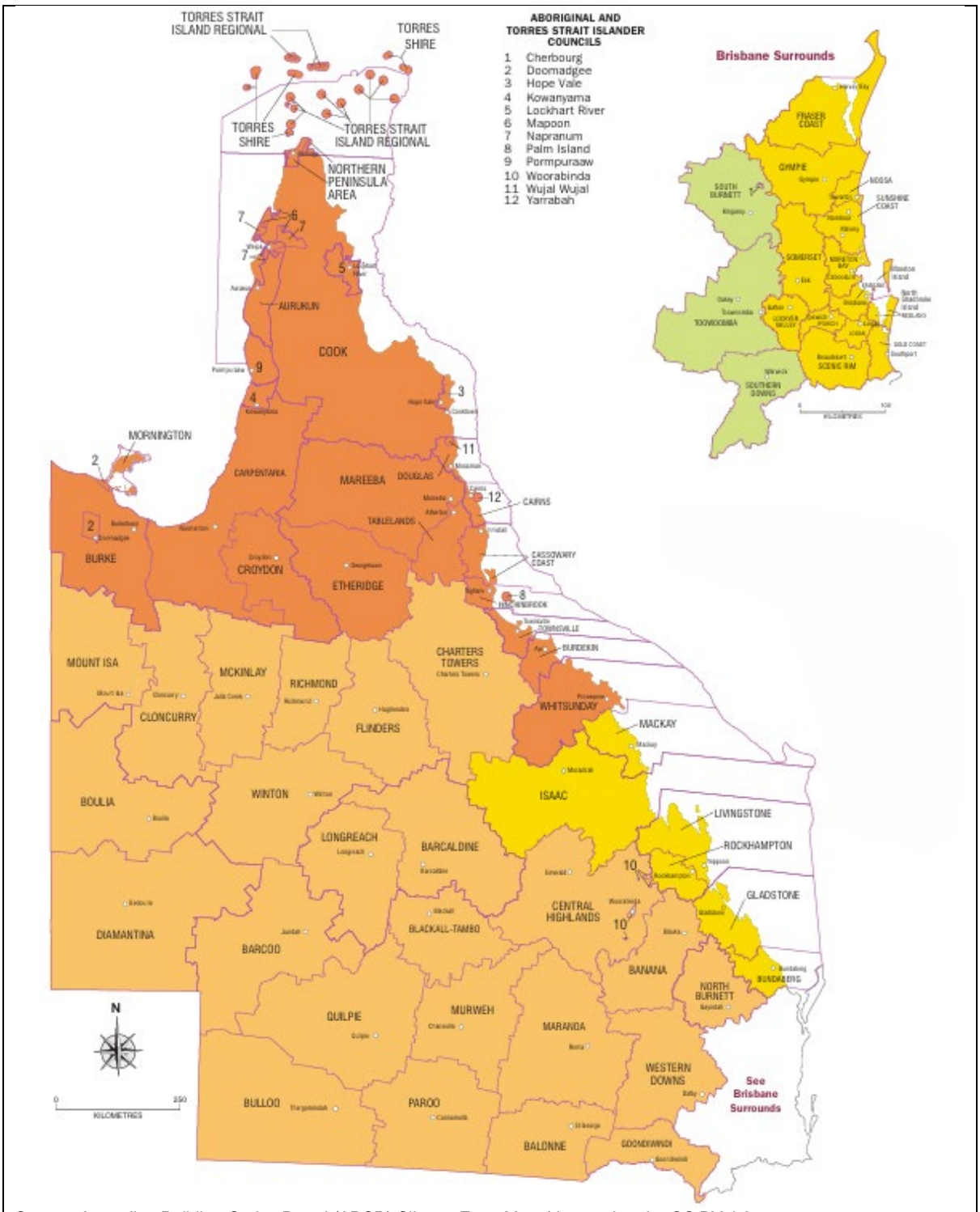
For each unit in a multi-unit residential building, a similar principle applies. The assessment will account for the unit's particular aspect (orientation in the building) and elevation (height above ground), as well as its fixtures and appliances.

More information

To find out more:

- Queensland's residential energy efficiency standards for new dwellings, visit the 'Energy equivalence building standard' on the Business Queensland website
- NatHERS, visit www.nathers.gov.au
- ABCB publications:
  - Energy Efficiency Handbooks for 'Housing energy efficiency' and 'Apartment energy efficiency'; and
  - Thermal bridging in residential buildings, visit Thermal bridging in residential buildings
- Energy efficiency housing design features and appliances, visit 'Your Home'
- Energy ratings for appliances, including energy rating calculator for various appliances to compare brands and models, visit Energy Rating

Figure 1: NCC climate zones



Source: Australian Building Codes Board (ABCB) Climate Zone Map. Licensed under CC BY 4.0.

BCA climate zone*	Prevailing climatic conditions
Zone 1 – Tropical	Hot humid summer, warm winter.
Zone 2 – Subtropical	Warm humid summer, mild winter.
Zone 3 – Hot arid	Hot dry summer, warm winter days and cold nights.
Zone 5 – Warm temperate	Warm summers, cold winters.

* BCA climate zone boundaries are based on current local government areas. Note: Queensland does not have an area covered by BCA climate zone 4.

To check for a specific location, see the ABCB's Interactive climate zone map.

Figure 2: Examples of the NatHERS Certificate and report

Note: Samples shown are the front page only.

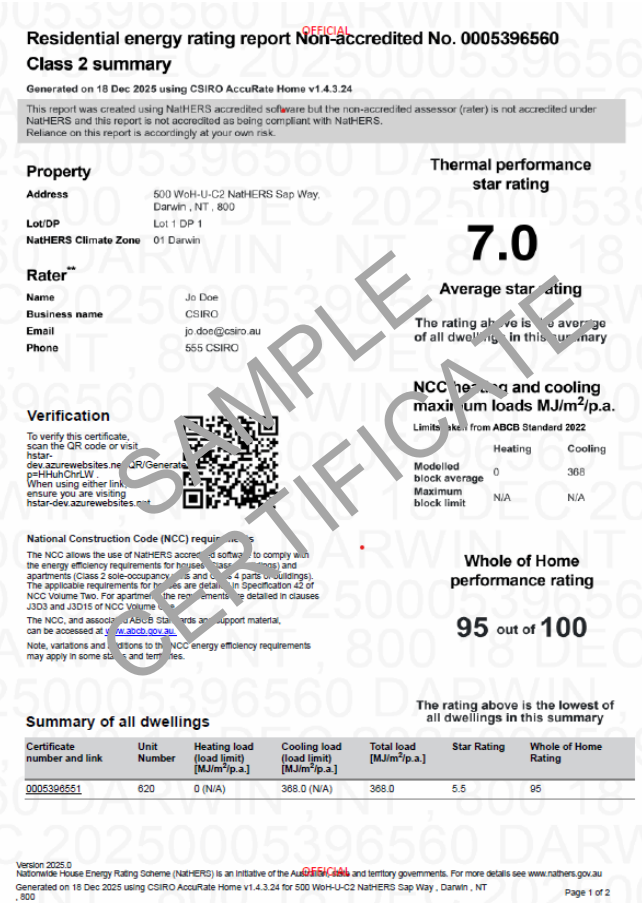
Accredited assessor = certificate

Certificate is in colour, with the NatHERS logo and assessor's accreditation details

This sample certificate is for a **house**, noting **60 out of 100** score for its whole of home energy budget.

Non-accredited assessor = report

Report is black and white only, and has no NatHERS logo



This sample report is for a **Class 2 building**, noting **95 out of 100** score for its whole of home energy budget.

Figure 3: Example of calculating average star rating for apartment buildings

Below is an example of how to calculate the average star rating of a 10-unit apartment building (class 2), that has six units with a compliant outdoor living area.

Individual NatHERS star ratings of units	Outdoor living area credits*	Number of stars	Average star rating of all units in the apartment building
4 units are rated 7-stars (4 x 7 = 28)	4 units have an outdoor living area (4 x 1 = 4)	32 (4 x 8)	72 ÷ 10 (units) = **7.2 stars**
2 units are rated 7-stars (2 x 7 = 14)	Both of these units do not have an outdoor living area (4 x 0 = 0)	14 (2 x 7)	
2 units are rated 6-star (2 x 6 = 12)	2 units have an outdoor living area (2 x 1 = 2)	14 (2 x 7)	
2 units are rated 6-stars (2 x 6 = 12)	Both of these units do not have an outdoor living area (4 x 0 = 0)	12 (2 x 6)	
66 stars as NatHERS	**6 stars as OLA credits**	**Total = 72**	

***** outdoor living area (OLA) design is QDC 4.1 compliant with a ceiling fan, so each unit is eligible for 1-star credit.

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