NCC 2022

ABCB NCC 2022 VOLUME TWO

BASIX Thermal Comfort Energy Efficiency Assessment

Accredited Star Rating

7

REFERENCE

607463_v2.0

SITE ADDRESS

Lot 15 (#15) Raven Circuit WARRIEWOOD 2102

DWELLING TYPE

Double Storey

COMMISSIONED BY

McDonald Jones Homes

ASSESSMENT DATE

2/07/2025

Energy Advance Australia Pty. Ltd.
NatHERS Accreditation Number: DMN/14/1662
34 Dellamarta Road WANGARA 6065
PO Box 1436 WANGARA DC 6947
ACN: 60 9332014 | 1300 850 228
energy@energyadvance.com.au
1300 850 228

THE SUMMARY

Address	Lot 15 (#15) Raven Circuit WARRIEWOOD 2102
Dwelling Type	Double Storey
State	New South Wales
Site Exposure	Suburban
Ground Floor Type	Concrete Slab-on-Ground

Façade Facing
East

Garage Side (viewed from the front)
Right-Hand Side

NatHERS Climate Zone	56
FirstRate 5 Engine:	Chenath Engine 3.22
Certificate Number	JX1C6S90G2
Accredited Star Rating	7

Modelled Wall Colour
Multiple Wall Colours: See Schedule/Drawings

Modelled Roof Colour
Solar Absorptance: Medium roof colour

Modelled Glazing Frame Colour
Glazing Frame Colour: Light

Conditioned Floor Area (m^2)	145.20
Unconditioned Floor (m^2)	11.90
Total (m^2)	157.10

	Area (m2)	Allowance (W/m2)	Total Maximum Watts
Class 1 Total Area	178.96	5.0	894.8
Class 10a Total Area	20.95	3.0	62.9
Total Outdoor Areas	26.12	4.0	104.5

Maximum Ceiling Insulation Penetration	Maximum Allowance	Maximum Penetration (m2)
	0.50%	0.89

If approved fireproof downlight covers, which can be fully covered by insulation, are specified and noted on the electrical plan by the building designer or architect or if IC4-rated downlights are installed, then there is no need to allow for the ceiling penetration.

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

	Target (MJ/m².pa)	Proposed (MJ/m².pa)	Efficiency Benchmark
Heating:	25.0	18.9	Pass: 27.8%
Cooling:	18.0	10.7	Pass: 50.9%
Total:	43.0	29.6	

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Certificate No. # JX1C6S90G2
Scan QR code or follow website link for rating details.
Assessor name Claude-Francois Sookloll
Accreditation No. DMN/14/1662
Property Address Lot 15 (#15) Raven Circuit WARRIEWOOD, 2102, NSW, 2102
https://www.fr5.com.au/QRCodeLanding?PublicId=JX1C6S90G2

THE ANALYSIS

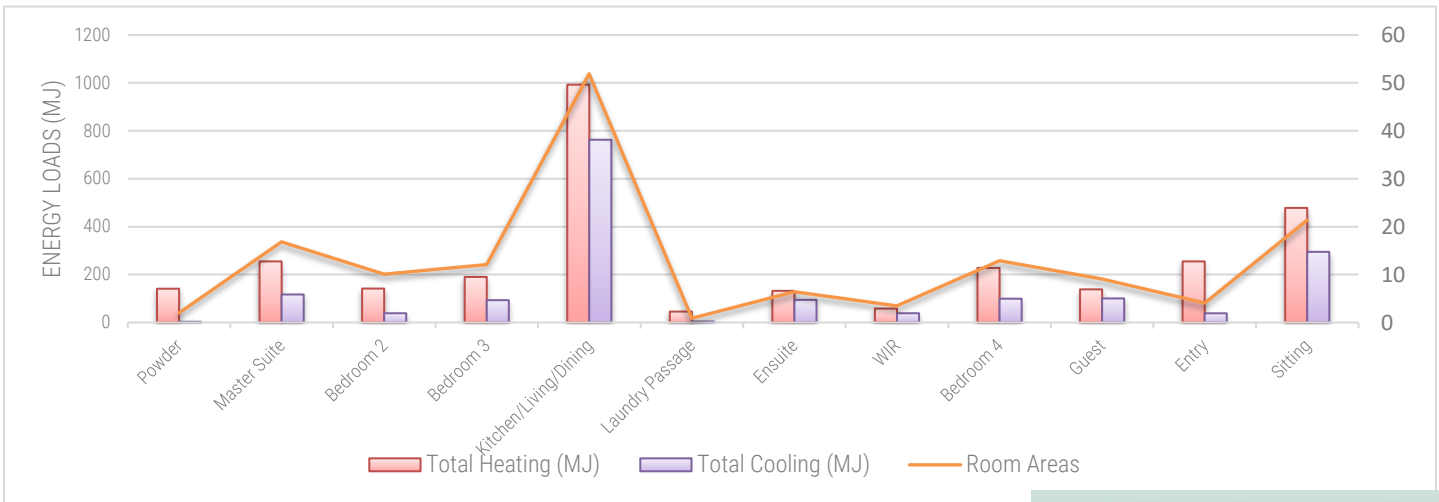
This dwelling exceeds minimum thermal comfort compliance targets by 31.2%

Cooling the main areas in this home each year uses as much energy as walking around the Earth 1.3 times, or watching Netflix continuously for approximately 0.5 years.

Heating the main areas in this home uses the same amount of energy every year as watching Netflix continuously for approximately 0.9 years, or walking around the Earth 2.4 times.

Room-by-Room Energy Use Analysis

This graph shows the annual energy needed to heat and cool each room to a comfortable temperature.
The taller the bar means the room requires either more warmth to stay cozy during cold weather, or energy to remain cool when it's hot outside.
The line represents what would be considered good energy use for the size of each room. When bars rise above this line, it means the room is using more energy than expected, highlighting opportunities for energy-efficient improvements.
The goal is shorter bars, indicating your home is comfortably heated and cooled without excessive energy use. Rooms with the tallest bars are key areas to focus on for energy-saving upgrades.



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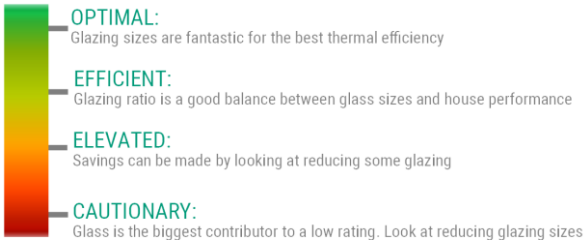
THE ANALYSIS

Understanding the Window Ratio

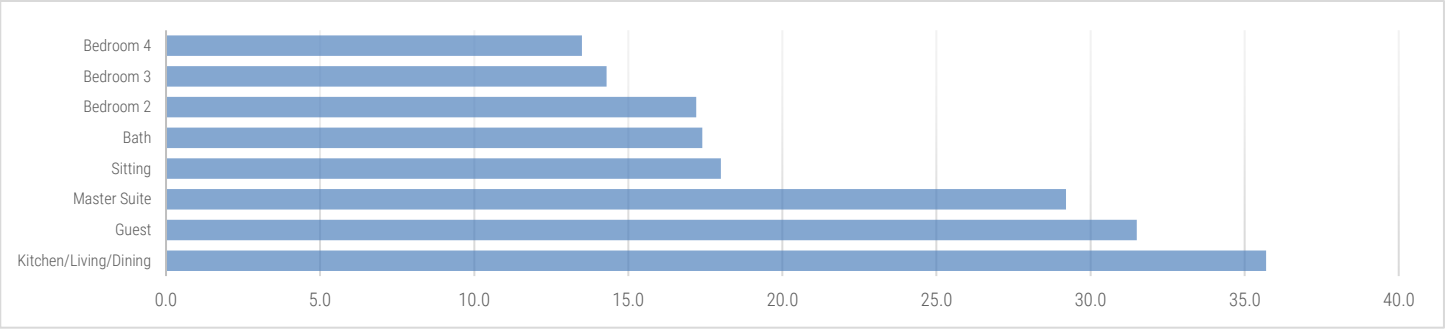
The ratio below shows the percentage of the dwelling's exterior that's made up of glass compared to the floor area. Ideally, a lower percentage contributes to better thermal efficiency, reducing energy loss and lowering energy bills.

This dwelling, with its fairly high glazing-to-floor area ratio, has the potential to improve its energy performance. Reductions to some of the sizes of certain windows or doors could lead to a cozier space in the cold and a cooler one in the warmer summer months.

26.7 %



Top 8 Window to Floor Area Ratios per Room



Mapping Out Glass: Orientation Analysis

The chart maps out the distribution of glass, showing their orientation around the house as percentages of the total floor area.

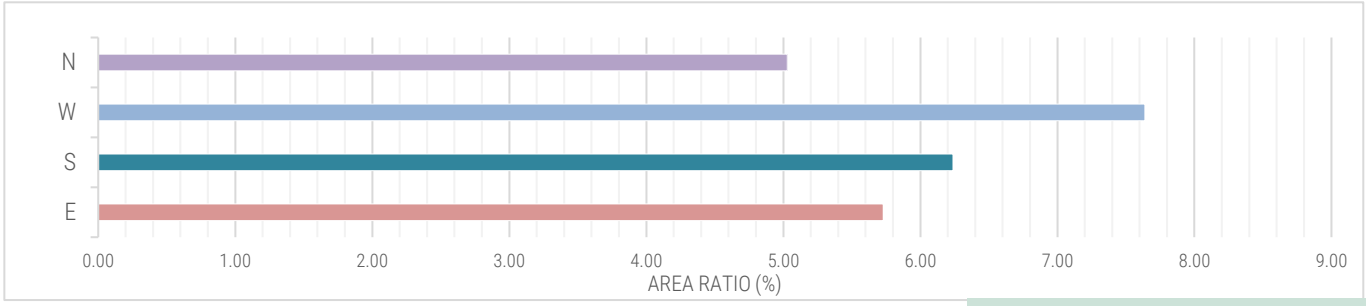
NORTH: Increase the proportion of minimally shaded glass facing north: between 10-15%

EAST: East-facing glass should be kept to under 8%.

SOUTH: South-facing glass should be reduced as much as possible; aiming for 5% or less.

WEST: Aim to limit glass on the west to less than 5% of the floor area to prevent excess heat gain.

These are guides to help enhance your home's thermal efficiency. For detailed shading strategies, refer to the floor plans.



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THE SPECIFICATIONS

Walls

CONSTRUCTION TYPE AND INSULATION	FRAME TYPE	LOCATION	THERMAL BREAK?
STF TBK | Brick Veneer | R2.2 Insulation | No Wrap	Steel	External	Yes
STF NTB INT | Plasterboard Stud Wall | R2.2 Insulation	Steel	Internal	No
STF TBK INT | Plasterboard Stud Wall | R2.2 Insulation	Steel	Internal	Yes
OTH | Double Leaf Brick Wall 110mm | Uninsulated	None	External	None
STF TBK | Framed | R2.2 Insulation | VP Wrap	Steel	External	Yes

ADDITIONAL NOTES

Refer to Plans/Drawings for the location of external walls.
Internal wall insulation: Throughout all internal walls
Multiple Wall Colours: See Schedule/Drawings

Roof and Ceiling

CONSTRUCTION TYPE	CEILING INSULATION (R)	SARKING	THERMAL BREAK?	BLANKET (R)
Ceiling with Floor Above	None	No	No	None
Metal Roof OR Tiled Roof w/Sarking	7.0	No	Yes (min: R0.2)	1.8

ADDITIONAL NOTES

Solar Absorptance: Medium roof colour
Ceiling Insulation to the House and Garage area
Min Ø 1,200mm ceiling fans added to the Bedrooms only

Floor

CONSTRUCTION TYPE	VENTILATION	FLOOR INSUL (R)	SLAB EDGE (R)	FLOOR AREAS (m^2)
85mm Concrete | 225mm Waffle	Enclosed	Integrated	None	90.4
Framed Suspended Floor | R4.1 Insulation	Elevated	4.1	None	10.3
Framed Suspended Floor | R4.1 Insulation	Enclosed	4.1	None	81.5

ADDITIONAL NOTES

Glazing

Glazing Frame Colour: Light

WERS CODE*	CHARACTERISTIC	TYPE	U_w-VALUE	$SHGC_w$	AREA (m^2)	AS-BUILT GLAZING TYPES
DOW-005-01 A	Standard Double Glazing	Awning Window	3.90	0.58	9.34	Locations as per drawings
TIM-001-01 W	Standard Single Glazing	Hinged Door	5.40	0.56	0.69	Locations as per drawings
DOW-022-03 B	Standard Double Glazing	Sliding Window	2.89	0.64	12.36	Locations as per drawings
JLN-009-11 B	Standard Double Glazing	Fixed Window	3.04	0.67	6.32	Locations as per drawings
GJA-071-01 A	Standard Double Glazing	Sliding Door	3.98	0.63	10.10	Locations as per drawings

This double storey has been modelled with restricted window openings (%) as per NCC Protection of Openable Windows Advisory Note

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THE REGULATIONS

13.7.1 Application of Part 13.7

(1) This Part applies to (a)a Class 1 building, (b)a Class 10a building, and (c)a Class 10b swimming pool associated with a Class 1 or 10a building.
(2) Part 13.7 must be applied as directed in H6D2(2).

13.7.2 Insulation of services

Thermal insulation for central heating water piping and heating and cooling ductwork must—
(a)be protected against the effects of weather and sunlight, and (b)be able to withstand the temperatures within the piping or ductwork; and (c) use thermal insulation material by AS/NZS 4859.1.

13.7.3 Central heating water piping

(1) Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Values as set out in (2) to (6).
(2) Internal piping including— (a)flow and return piping that is— (i)within an unventilated wall space or
(ii)within an internal floor between storeys; or (iii)between ceiling insulation and a ceiling and
(b)heated water piping encased within a concrete floor slab (except that which is part of a floor heating system), must, in all climate zones, have a minimum material R-Value of 0.4.
(3) Piping located within a ventilated wall space, an enclosed building subfloor or a roof space, including—
(a)flow and return piping; and (b)cold water supply piping within 500 mm of the connection to the central water heating system; and (c)relief valve piping within 500 mm of the connection to the central water heating system, must have a minimum material R-Value by (5).
(4) Piping located outside the building or in an unenclosed building subfloor or roof space, including—
(a)flow and return piping; and (b)cold water supply piping within 500 mm of the connection to the central water heating system; and (c)relief valve piping within 500 mm of the connection to the central water heating system, must have a minimum material R-Value by (6).
(5) Piping referred to in (3) must have a minimum material R-Value of— (a)in climate zones 1, 2, 3 and 5 — 0.6; and
(b)in climate zones 4, 6 and 7 — 0.9; and (c)in climate zone 8 — 1.3.
(6)Piping referred to in (4) must have a minimum material R-value of—
(a)in climate zones 1, 2, 3 and 5 — 0.6; and (b)in climate zones 4, 6 and 7 — 1.3; and (c) in climate zone 8 — 1.3.

13.7.4 Heating and cooling ductwork

(1) Heating and cooling ductwork and fittings must—
(a)achieve the material R-Value in (4), and (b)be sealed against air loss— (i)by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets by AS 4254.1 and AS 4254.2 for a Class C seal; or (ii)for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.
(2) Duct insulation must— (a)abut adjoining duct insulation to form a continuous barrier and
(b)be installed so that it maintains its position and thickness, other than at flanges and supports; and where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space— (i)be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp, and (ii)have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.
(3) The requirements of (1) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.
(4)The material R-Value required by (1)(a) must be determined by the following: (a)In a heating-only system or cooling-only system including an evaporative cooling system— (i)ductwork must have a minimum material R-Value of— (A)in climate zones 1 to 7 — 1.0; and (B)in climate zone 8 — 1.5; and (ii)fittings must have a minimum material R-Value of 0.4.
(b)In a combined heating and refrigerated cooling system— (i)ductwork must have a minimum material R-Value of— (A)in climate zones 1, 3, 4, 6 and 7 — 1.5; and (B)in climate zones 2 and 5 — 1.0; and (C)in climate zone 8 — 1.5; and (ii)fittings must have a minimum material R-Value of 0.4.
(c)For (b)(i), the minimum material R-value required for ductwork may be reduced by 0.5 for combined heating and refrigerated cooling systems in climate zones 1, 3, 4, 6 and 7 if the ducts are— (i)under a suspended floor with an enclosed perimeter; or in a roof space that has an insulation of greater than or equal to R0.5 directly beneath the roofing.

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THE REGULATIONS

13.7.5 Electric resistance space heating

An electric resistance space heating system that serves more than one room must have— (a)separate isolating switches for each room and
(b)a separate temperature controller and time switch for each group of rooms with common heating needs and
(c) power loads of not more than 110 W/m2 for living areas, and 150 W/m2 for bathrooms.

13.7.6 Artificial lighting

(1)The lamp power density or illumination power density of artificial lighting, excluding heaters that emit light, must not exceed the allowance of— (a)5 W/m2 in a Class 1 building and (b)4 W/m2 on a Verandah, balcony or the like attached to a Class 1 building; and (c)3 W/m2 in a Class 10a building associated with a Class 1 building.

(2) The illumination power density allowance in (1) may be increased by dividing it by the relevant illumination power density adjustment factor for a control device in (6) as applicable.
(3) When designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires.
(4) If halogen lamps are installed, they must be separately switched from fluorescent lamps.
(5) Artificial lighting around the perimeter of a building must— (a)be controlled by a daylight sensor or (b)have an average light source efficacy of not less than 40 Lumens/W.
(6) The following illumination power density adjustment factors apply to control devices for artificial lighting:
(a)Lighting timer for corridor lighting: 0.7. Motion detector —(i)(A) at least 75% of the area of space is controlled by one or more motion detectors; or
(b)an area of less than 200 m2 is switched as a block by one or more motion detectors; and (i)0.7, where up to 6 lights are switched as a block by one or more detectors; and (ii)0.55, where up to 2 lights are switched as a block by one or more detectors.
(c)Manual dimming system where not less than 75% of the space area is controlled by manually operated dimmers: 0.85.
(d)Programmable dimming system where not less than 75% of the space area is controlled by programmable dimmers: 0.85.
(e)Dynamic dimming system, with automatic compensation for lumen depreciation, the design lumen depreciation factor is not less than — (i)0.9 for fluorescent lights or (ii)0.8 for high-pressure discharge lights.
(f)Fixed dimming where at least 75% of the area is controlled by fixed dimmers that reduce the overall lighting level and the power consumption of the lighting — equal to the % of full power to which the dimmer is set divided by 0.95.
(g)Daylight sensor and dynamic lighting control device, with dimmed or stepped switching of lights adjacent to windows: (i)Lights within the space adjacent to windows other than roof lights for a distance from the window equal to the depth of the floor at window head height: 0.5. (ii)Lights within the space adjacent to roof lights: 0.6.
(7) For (6)(c), manual dimming is where lights are controlled by a knob, slider, or other mechanism or where there are pre-selected scenes that are manually selected.
(8) For (6)(d), programmed dimming is where pre-selected scenes or levels are automatically selected by the time of day, photoelectric cell, or occupancy sensor.
(9) For (6)(e), dynamic dimming is where the lighting level is varied automatically by a photoelectric cell to either proportionately compensate for the availability of daylight or the lumen depreciation of the lamps.
(10) For (6)(f), fixed dimming is where lights are controlled to a level, and that level cannot be adjusted by the user.
(11) For (6)(g)(i) and (ii), the illumination power density adjustment factor is only applied to lights controlled by that item — this adjustment factor does not apply to tungsten halogen or other incandescent sources.

13.7.7 Water heater in a heated water supply system

A water heater in a heated water supply system must be designed and installed by Part B2 of NCC Volume Three — Plumbing Code of Australia.

13.7.8 Swimming pool heating and pumping

(1) Heating for a swimming pool must be by— (a)a solar heater not boosted by electric resistance heating or
(b)a heater using reclaimed energy, (c)a gas heater, or (d)a heat pump, or (e)a combination of (a) to (d).
(2) Where some or all of the heating required by (1) is by a gas heater or a heat pump, the swimming pool must have— (a)a cover with a minimum R-Value of 0.05 unless located in a conditioned space and (b)a time switch to control the operation of the heater.
(3)A time switch must be provided to control the operation of a circulation pump for a swimming pool.
(4) For the purposes of 13.7.8, a swimming pool does not include a spa pool.

13.7.9 Spa pool heating and pumping

(1) Heating for a spa pool that shares a water recirculation system with a swimming pool must be by— (a)a solar heater or
(b)a heater using reclaimed energy or a gas heater, or (d) (e) a combination of (a) to (d).
(2) Where some or all of the heating required by (1) is by a gas heater or a heat pump, the spa pool must have— (a)a cover and (b)a push button and a time switch to control the operation of the heater.
(3)A time switch must be provided to control the operation of a circulation pump for a spa pool having a capacity of 680 L or more.

Nationwide House Energy Rating Scheme® NatHERS® Certificate No. JX1C6S90G2

Generated on 2 Jul 2025 using FirstRate5: 5.5.5a (3.22)

Property

Address	Lot 15 (#15) Raven Circuit WARRIEWOOD, 2102, NSW, 2102
Lot/DP	15 / 271326
NCC Class*	Class 1a
Floor/all Floors Type	New Home

Plans

Main plan	607463_v2.0
Prepared by	McDonald Jones Homes

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	145.2	suburban
Unconditioned*	31	**NatHERS climate zone**
Total	176.2	56 Mascot AMO
Garage	19.1	

Accredited assessor

Name	Claude-Francois Sookloll
Business name	Energy Advance
Email	energy@energyadvance.com.au
Phone	1300 850 228
Accreditation No.	DMN/14/1662
Assessor Accrediting Organisation	Design Matters National
Declaration of interest	No

NCC Requirements

NCC provisions	Volume 2
State/Territory variation	Yes

National Construction Code (NCC) requirements

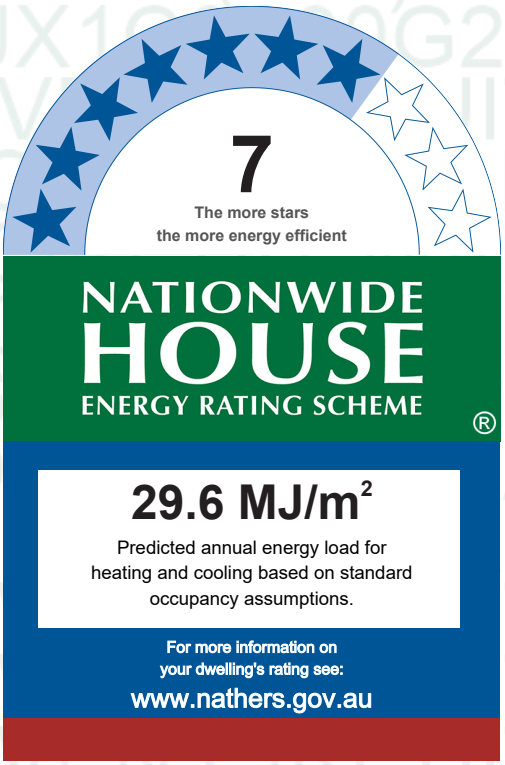
The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating



Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	18.9	10.7
Load limits	N/A	N/A

Features determining load limits

Floor type (lowest conditioned area)	N/A
NCC climate zone 1 or 2	N/A
Outdoor living area	N/A
Outdoor living area ceiling fan	N/A

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=JX1C6S90G2 When using either link, ensure you are visiting www.fr5.com.au.

*Refer to glossary.

About the ratings

Thermal performance rating

NatHERS thermal software models the expected heating and cooling energy loads using information about the design, construction, climate and common patterns of household use. The thermal performance rating (shown as a star rating on this Certificate) does not take into account appliances, apart from the airflow impacts from ceiling fans.

Whole of Home performance rating

NatHERS Whole of Home software uses the heating and cooling energy loads combined with the energy performance of the home's appliances (heating, cooling, hot water, lighting, pool/spa pump and onsite renewable energy generation and storage) and models the expected energy value* of the whole home. The Whole of Home performance rating is shown as a score out of 100 on this Certificate.

Heating & Cooling Load Limits

Additional information

In some locations under the NCC NatHERS pathway, separate heating and cooling load limits may apply. Minimum required star ratings in northern parts of Australia may also be affected by the presence or absence of an outdoor living area and/or an outdoor living area ceiling fan. Refer to the ABCB NatHERS heating and cooling load limits Standard 2022 for details or contact the relevant local building regulating authority, noting that State and Territory variations may also apply.

Setting options:

Floor type:

- CSOG – Concrete Slab on Ground
- SF – Suspended Floor (or a mixture of CSOG and SF)
- NA – Not Applicable

NCC climate Zone 1 or 2:

- Yes
- No
- NA – not applicable

Outdoor living area:

- Yes
- No
- NA – not applicable

Outdoor living area ceiling fan:

- Yes
- No
- NA – not applicable

Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.

Predicted Whole of Home annual impact by appliance

Shows the contribution each appliance has on the home's annual energy use, greenhouse gas emissions and cost without solar

Energy use:

Greenhouse gas emissions:

Cost:

Graph key:

*Refer to glossary.

Certificate check

The checklist covers important items impacting the dwelling's ratings.
It is recommended that the accuracy of the whole certificate is checked.

Note: The boxes indicate when and who should check each item.
It is not mandatory to complete this checklist.

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Genuine certificate check					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		☐	☐	☐	☐
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		☐	☐	☐	☐
Thermal performance check					
Windows and glazed doors					
Does the window size, opening type and location shown on the NatHERS-stamped plans or as installed match what is shown in *'Window and glazed door schedule'* and *'Roof window schedule'* tables on this Certificate?	☐	☐	☐	☐	☐
Does the installed windows meet the substitution tolerances (AFRC* based SHGC* and U-values*) as shown in the *'Window and glazed door type and performance'* and *'Roof window type and performance'* tables on this Certificate?			☐	☐	☐
External walls					
Does the external wall bulk insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the External wall type table on this Certificate?	☐	☐	☐	☐	☐
Does the external wall shade (colour) match what is shown in the *'External wall type'* table on this Certificate?	☐	☐	☐	☐	☐
Floor					
Does the floor insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Floor type'* table on this certificate?	☐	☐	☐	☐	☐
Ceiling penetrations*					
Does the *'quantity'* and *'type'* of ceiling penetrations* (e.g. downlights, exhaust fans, etc) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling penetrations'* table on this Certificate?	☐	☐	☐	☐	☐
Ceiling					
Does the ceiling insulation (R-value) shown on the NatHERS-stamped plans or as installed match what is shown in the *'Ceiling type'* table on this Certificate?	☐	☐	☐	☐	☐
Roof					
Does the external roof shade (colour) on the NatHERS stamped plans or as installed match what is shown in the *'Roof type'* table on this Certificate?	☐	☐	☐	☐	☐
Apartment entrance doors (NCC Class 2 assessments only)					
Does the 'External Door Schedule' show apartment entrance doors? Please note that an "external door" between the modelled dwelling and a shared space, such as an enclosed corridor or foyer, should not be included in the assessment (because it overstates the possible ventilation) and would invalidate the Certificate.	☐	☐		☐	☐
Exposure*					
Has the appropriate exposure type (terrain) (shown on page 1) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".	☐	☐		☐	☐
Heating and cooling load limits*					
Do the load limits settings (shown on page 1) match the values in the ABCB Standard 2022: NAtHERS heating and cooling load limits for the appropriate climate zone?	☐	☐	☐	☐	☐

*Refer to glossary.

Certificate check

Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
Additional NCC requirements for thermal performance (not included in the NatHERS assessment)					
Thermal bridging					
Does the dwelling meet the NCC requirement for thermal bridging?		☐	☐	☐	☐
Insulation installation method					
Has the insulation been installed according to the NCC requirements?			☐	☐	☐
Building sealing					
Does the dwelling meet the NCC requirements for Building Sealing?		☐	☐	☐	☐
Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)					
Appliances					
Does the cooling appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the Appliance schedule on this Certificate?	☐	☐	☐	☐	☐
Does the heating appliance/s type, location and efficiency/performance shown on the NatHERS-stamped plans or installed, match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the hot water system type and efficiency/performance shown on the NatHERS-stamped plans or as installed match the location and minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the pool pump efficiency/performance shown on the NatHERS-stamped plans or as installed match the minimum efficiency/performance requirements shown in the *'Appliance schedule'* on this Certificate?	☐	☐	☐	☐	☐
Does the onsite renewable energy system type, orientation and system size or generation capacity shown on the NatHERS stamped plans or installed match the *'Onsite Renewable Energy schedule'* on this Certificate?	☐	☐	☐	☐	☐
Additional NCC Requirements for Services (not included in the NatHERS assessment)					
Does the lighting meet the artificial lighting requirements specified in the NCC?		☐	☐	☐	☐
Does the hot water system meet the additional requirements specified in the NCC?		☐	☐	☐	☐
Provisional values* check					
Have provisional values* been used in the assessment and, if so, are they noted in *'Additional notes'* table below?	☐	☐			
Other NCC requirements					

Note: This Certificate only covers the energy efficiency requirements in the NCC. Additional requirements that must also be satisfied include, but are not limited to: condensation, structural and fire safety requirements and any state or territory variations to the NCC energy efficiency requirements.

Additional notes

BCA Climate Zone 5

Please note, a non-reflective vapour permeable wall wrap has been modelled throughout the external walls of this dwelling

Perimeter insulation has not been included in the modelling of this dwelling

Eaves indicated by the 'Horizontal shading feature* maximum projection (mm)' may not be directly opposing the respective wall (i.e. some eaves may be horizontally offset)

Where applicable, an additional 150mm has been added to the projection of all 'Horizontal shading features & eaves' to account for the Gutter & Fascia Board

*Refer to glossary.

Please note, restricted window openings (%) have been modelled as per NCC 2022 requirements

Please note, IC/IC-F Class downlights have been modelling to this dwelling

Where applicable, proxy WERS codes may be used to meet U-Value and SHGC limitations while maintaining compliance

Proxy codes refer to performance values from a comparable product when exact test data for the selected window or glazed door is unavailable

The selected window or glazed door must have a U-Value lower than the value indicated, and the SHGC must be within +/-5% of the specified value to comply

*Refer to glossary.

Room *schedule*

Room	Zone Type	Area [m²]
Guest	bedroom	9.1
Entry	dayTime	4.1
Laundry	unconditioned	3.3
Laundry Passage	dayTime	0.9
Powder	dayTime	2
Kitchen/Living/Dining	kitchen	51.9
Garage	garage	19.1
Master Suite	bedroom	16.8
Bedroom 2	bedroom	10.1
Bedroom 3	bedroom	12.1
Bedroom 4	bedroom	12.9
WIR	nightTime	3.5
Ensuite	nightTime	6.4
Bath	unconditioned	8.6
Sitting	living	21.4

Window and glazed door *type and performance*

Default* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
TIM-001-01 W	Timber A SG Clear	5.4	0.56	0.53	0.59

Custom* windows

				Substitution tolerance ranges	
Window ID	Window description	Maximum U-value*	SHGC*	SHGC lower limit	SHGC upper limit
DOW-005-01 A	Manor Awning Window DG 3/12/3	3.9	0.58	0.55	0.61
DOW-022-03 B	TB Aluminium Sliding Window DG 4Clr/12Ar/4Clr	2.89	0.64	0.61	0.67
JLN-009-11 B	TB - 100mm Fixed Window DG 4mm-12Ar-4mm	3.04	0.67	0.64	0.7
GJA-071-01 A	Type 245 Aluminium Sliding Door DG 4/10/4	3.98	0.63	0.6	0.66

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Guest	DOW-005-01 A	W1	2360	610	awning	60.0	E	No

*Refer to glossary.

Guest	DOW-005-01 A	W2	2360	610	awning	60.0	E	No
Laundry	TIM-001-01 W	D3	847	820	casement	100.0	S	No
Kitchen/Living/-Dining	DOW-022-03 B	W5	1800	850	sliding	30.0	S	No
Kitchen/Living/-Dining	DOW-022-03 B	W6	1800	1810	sliding	30.0	S	No
Kitchen/Living/-Dining	JLN-009-11 B	W3	2360	1570	fixed	0.0	W	No
Kitchen/Living/-Dining	GJA-071-01 A	D2	2400	2170	sliding	45.0	N	No
Kitchen/Living/-Dining	DOW-022-03 B	W4	2360	2050	sliding	30.0	W	No
Master Suite	GJA-071-01 A	D4	2100	2328	sliding	60.0	E	No
Bedroom 2	DOW-005-01 A	W12	1200	1450	awning	45.0	S	No
Bedroom 3	DOW-005-01 A	W11	1200	1450	awning	45.0	W	No
Bedroom 4	DOW-005-01 A	W10	1200	1450	awning	45.0	W	No
Ensuite	DOW-005-01 A	W7	1457	850	awning	10.0	E	No
Bath	DOW-022-03 B	W9	1029	1450	sliding	10.0	N	No
Sitting	JLN-009-11 B	W13	1800	1450	fixed	0.0	S	No
Sitting	DOW-022-03 B	W8	857	1450	sliding	45.0	N	No

Roof window* *type and performance value*

Default* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Custom* roof windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
No Data Available					

Roof window* *schedule*

Location	Window ID	Window no.	Opening %	Area [m²]	Width [mm]	Orientation	Outdoor shade	Indoor shade
No Data Available								

Skylight* *type and performance*

Skylight ID	Skylight description	Skylight shaft reflectance
No Data Available		

Skylight* *schedule*

*Refer to glossary.

Location	Skylight ID	Skylight No.	Skylight shaft length [mm]	Area [m²]	Orient-ation	Outdoor shade	Diffuser
No Data Available							

External door *schedule*

Location	Height [mm]	Width [mm]	Opening %	Orientation
Entry	2340	920	100.0	E
Laundry	1493	820	100.0	S
Garage	2400	2575	100.0	E

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	NCC 2022 STANDARD - STEEL TBK - STF TBK | Brick Veneer | R2.2 Insulation | No Wrap	0.67	Dark	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.2)	No
2	NCC 2022 MISC - OTH | Double Leaf Brick Wall 110mm | Uninsulated	0.67	Dark		No
3	NCC 2022 VAPOUR - STEEL TBK - STF TBK | Framed | R2.2 Insulation | VP Wrap	0.33	Light	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.2)	No
4	NCC 2022 VAPOUR - STEEL TBK - STF TBK | Framed | R2.2 Insulation | VP Wrap	0.33	Light	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.2)	No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Guest	1	2745	3150	S	0	Yes
Guest	1	2745	2901	E	1465	Yes
Guest	1	2745	1470	N	1945	Yes
Entry	1	2745	1503	E	2935	Yes
Laundry	1	2745	1715	S	0	Yes
Kitchen/Living/Dining	1	2745	9535	S	0	Yes
Kitchen/Living/Dining	1	2745	5420	N	0	Yes
Kitchen/Living/Dining	1	2745	3006	W	2485	Yes
Kitchen/Living/Dining	1	2745	2500	N	2985	Yes
Kitchen/Living/Dining	1	2745	3642	W	0	Yes
Garage	1	2815	1367	W	600	Yes
Garage	1	2815	291	E	2935	Yes
Garage	1	2815	465	S	4831	Yes
Garage	2	2815	3170	E	600	Yes

*Refer to glossary.

Garage	3	2815	5550	N	0	Yes
Master Suite	4	2595	3323	S	730	Yes
Master Suite	4	2128	372	S	730	Yes
Master Suite	1	467	372	S	730	No
Master Suite	4	2128	4861	E	2200	Yes
Master Suite	1	467	4861	E	2200	No
Master Suite	4	2128	910	N	735	Yes
Master Suite	1	467	910	N	735	Yes
Bedroom 2	4	2595	3580	S	730	Yes
Bedroom 3	4	2595	3021	W	730	Yes
Bedroom 3	4	2595	3805	S	730	Yes
Bedroom 4	4	2595	3552	W	730	Yes
Bedroom 4	4	2595	3805	N	730	Yes
WIR	4	2595	1170	S	730	Yes
Ensuite	4	2595	1784	E	730	Yes
Ensuite	4	2595	2577	N	730	Yes
Bath	4	2595	3720	N	730	Yes
Sitting	4	2967	2000	S	730	Yes
Sitting	4	2595	3200	N	730	Yes

Internal wall *type*

Wall ID	Wall type	Area [m²]	Bulk insulation
1	NCC 2022 STANDARD - STEEL NTB - STF NTB INT | Plasterboard Stud Wall | R2.2 Insulation	148.4	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.2)
2	NCC 2022 STANDARD - STEEL TBK - STF TBK INT | Plasterboard Stud Wall | R2.2 Insulation	19.6	Glass fibre batt (k = 0.044 density = 12 kg/m3) (R2.2)

Floor *type*

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Guest	FLOOR - 85mm Concrete | 225mm Waffle	9.1	Enclosed	R0.0	Carpet
Entry	FLOOR - 85mm Concrete | 225mm Waffle	4.1	Enclosed	R0.0	Tiles
Laundry	FLOOR - 85mm Concrete | 225mm Waffle	3.3	Enclosed	R0.0	Tiles
Laundry Passage	FLOOR - 85mm Concrete | 225mm Waffle	0.9	Enclosed	R0.0	Tiles
Powder	FLOOR - 85mm Concrete | 225mm Waffle	2	Enclosed	R0.0	Tiles

*Refer to glossary.

Kitchen/Living/D- ining	FLOOR - 85mm Concrete | 225mm Waffle	4.4	Enclosed	R0.0	Carpet
Kitchen/Living/D- ining	FLOOR - 85mm Concrete | 225mm Waffle	47.5	Enclosed	R0.0	Tiles
Garage	FLOOR - 85mm Concrete | 225mm Waffle	11.7	Enclosed	R0.0	none
Garage	FLOOR - 85mm Concrete | 225mm Waffle	7.4	Enclosed	R0.0	none
Master Suite	FLOOR - Framed Suspended Floor | R4.1 Insulation	2.4	Elevated	R4.1	Carpet
Master Suite	FLOOR - Framed Suspended Floor | R4.1 Insulation	14.3	Enclosed	R4.1	Carpet
Bedroom 2	FLOOR - Framed Suspended Floor | R4.1 Insulation	10.1	Enclosed	R4.1	Carpet
Bedroom 3	FLOOR - Framed Suspended Floor | R4.1 Insulation	12.1	Enclosed	R4.1	Carpet
Bedroom 4	FLOOR - Framed Suspended Floor | R4.1 Insulation	5.3	Enclosed	R4.1	Carpet
Bedroom 4	FLOOR - Framed Suspended Floor | R4.1 Insulation	7.6	Elevated	R4.1	Carpet
WIR	FLOOR - Framed Suspended Floor | R4.1 Insulation	3.5	Enclosed	R4.1	Carpet
Ensuite	FLOOR - Framed Suspended Floor | R4.1 Insulation	0.3	Elevated	R4.1	Carpet
Ensuite	FLOOR - Framed Suspended Floor | R4.1 Insulation	6.1	Enclosed	R4.1	Tiles
Bath	FLOOR - Framed Suspended Floor | R4.1 Insulation	8.6	Enclosed	R4.1	Tiles
Sitting	FLOOR - Framed Suspended Floor | R4.1 Insulation	21.4	Enclosed	R4.1	Carpet

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Guest	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No

*Refer to glossary.

Entry	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Laundry	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Laundry Passage	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Powder	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Kitchen/Living/D- ining	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Kitchen/Living/D- ining	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Garage	FLOOR - Framed Suspended Floor | R4.1 Insulation	R4.1	No
Garage	Plasterboard	R7.0	Yes
Master Suite	Plasterboard	R7.0	Yes
Master Suite	Plasterboard	R7.0	Yes
Bedroom 2	Plasterboard	R7.0	Yes
Bedroom 3	Plasterboard	R7.0	Yes
Bedroom 4	Plasterboard	R7.0	Yes
Bedroom 4	Plasterboard	R7.0	Yes
WIR	Plasterboard	R7.0	Yes
Ensuite	Plasterboard	R7.0	Yes
Bath	Plasterboard	R7.0	Yes
Sitting	Plasterboard	R7.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Guest	2	Downlights	0	0	Sealed
Entry	1	Downlights	0	0	Sealed
Laundry	1	Downlights	0	0	Sealed
Laundry Passage	1	Downlights	0	0	Sealed
Powder	1	Exhaust Fans	250	250	Sealed
Powder	1	Downlights	0	0	Sealed
Kitchen/Living/Dining	1	Exhaust Fans	250	250	Sealed
Kitchen/Living/Dining	11	Downlights	0	0	Sealed

*Refer to glossary.

Master Suite	4	Downlights	0	0	Sealed
Bedroom 2	3	Downlights	0	0	Sealed
Bedroom 3	3	Downlights	0	0	Sealed
Bedroom 4	4	Downlights	0	0	Sealed
WIR	1	Downlights	0	0	Sealed
Ensuite	2	Downlights	0	0	Sealed
Bath	2	Downlights	0	0	Sealed
Sitting	5	Downlights	0	0	Sealed

Ceiling *fans*

Location	Quantity	Diameter [mm]
Master Suite	1	1200
Bedroom 2	1	1200
Bedroom 3	1	1200
Bedroom 4	1	1200

Roof *type*

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Cont:Attic-Continuous	1.8	0.64	Dark

Thermal bridging *schedule for steel frame elements*

Building element	Steel section dimensions [height x width, mm]	Frame spacing [mm]	Steel thickness [BMT,mm]	Thermal break [R-value]
Internal wall	90 x 40	600	0.75	0.2
External wall	90 x 40	600	0.75	0.2
Ceiling	90 x 40	900	0.75	0.2

Appliance *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

Note: A flat assumption of 5W/m2 is used for lighting, therefore lighting is not included in the appliance schedule.

Cooling system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Heating system

Appliance/ system type	Location	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.				

Hot water system

*Refer to glossary.

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Hot Water CER Zone	Zone 3 STC	Assessed daily load
No Whole of Home performance assessment conducted for this certificate.					

Pool/spa equipment

Appliance/ system type	Fuel type	Minimum efficiency/ performance	Recommended capacity
No Whole of Home performance assessment conducted for this certificate.			

Onsite renewable energy *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Orientation	System size or generation capacity
No Whole of Home performance assessment conducted for this certificate.		

Battery *schedule*

(not applicable if a Whole of Home performance assessment is not conducted for this certificate)

System type	Size [battery storage capacity]
No Whole of Home performance assessment conducted for this certificate.	

*Refer to glossary.

Explanatory Notes

About this report

NatHERS ratings are a reliable guide for comparing different dwelling designs and to demonstrate that designs meet the energy efficiency requirements in the National Construction Code.

NatHERS ratings use computer modelling to evaluate a home's energy efficiency and performance. They use localised climate data and standard assumptions on how people use their home to predict the heating and cooling energy loads and energy value* of the whole home. The thermal performance star rating uses the home's building specifications, layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings) to predict the heating and cooling energy loads. The Whole of Home performance rating uses information about the home's appliances and onsite energy generation and storage to estimate the homes energy value*.

The actual energy loads, cost and greenhouse gas emissions of a home may vary from that predicted. This is because the assumptions will not always match the actual occupant usage patterns. For example, the number of occupants and how people use their appliances will vary. Energy efficient homes use less energy, are warmer on cool days, cooler on hot days and cost less to run.

Accredited assessors

For quality assured NatHERS Certificates, always use an accredited or licenced assessor registered with an Assessor Accrediting Organisation (AAO). AAOs have strict quality assurance processes, and professional development requirements ensuring consistently high standards for assessments.

Non-accredited assessors (Raters) have no ongoing training requirements and are not quality assured.

Any queries about this report should be directed to the assessor. If the assessor is unable to address questions or concerns, contact the AAO specified on the front of this certificate.

Disclaimer

The NatHERS Certificate format is developed by the NatHERS Administrator. However, the content in the certificate is entered by the assessor. It is the assessor's responsibility to use NatHERS accredited software correctly and follow the NatHERS Technical Note to produce a NatHERS Certificate.

The predicted annual energy load, cost and greenhouse gas emissions in this NatHERS Certificate are an estimate based on an assessment of the dwelling's design by the assessor. It is not a prediction of actual energy use, cost or emissions. The information and ratings may be used to compare how other dwellings are likely to perform when used in a similar way.

Information presented in this report relies on a range of standard assumptions (both embedded in NatHERS accredited software and made by the assessor who prepared this report), including assumptions about occupancy, behaviour, appliance performance, indoor air temperature and local climate.

Not all assumptions made by the assessor using the NatHERS accredited software tool are presented in this report and further details or data files may be obtained from the assessor.

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
AFRC	Australian Fenestration Rating Council
Assessed floor area	the floor area modelled in the software for the purpose of the NatHERS assessment. Note, this may not be consistent with the floor area in the design documents.
Ceiling penetrations	features that require a penetration to the ceiling, including downlights, vents, exhaust fans, range hoods, chimneys and flues. Excludes fixtures attached to the ceiling with small holes through the ceiling for wiring, e.g. ceiling fans; pendant lights, and heating and cooling ducts.
Conditioned	a zone within a dwelling that is expected to require heating and cooling based on standard occupancy assumptions. In some circumstances it will include garages.
COP	Coefficient of performance
Custom windows	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
Default windows	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
EER	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
Energy use	This is your homes rating without solar or batteries.
Energy value	The net cost to society including, but not limited to, costs to the building user, the environment and energy networks (as defined in the ABCB Housing Provisions Standard).
Entrance door	these signify ventilation benefits in the modelling software and must not be modelled as a door when opening to a minimally ventilated corridor in a Class 2 building.
Exposure category – exposed	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
Exposure category – open	terrain with few obstructions at a similar height e.g. grasslands with few well scattered obstructions below 10m, farmland with scattered sheds, lightly vegetated bush blocks, elevated units (e.g. above 3 floors).
Exposure category – suburban	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
Exposure category – protected	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
Horizontal shading feature	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
National Construction Code (NCC) Class	the NCC groups buildings by their function and use, and assigns a classification code. NatHERS software models NCC Class 1, 2 or 4 buildings and attached Class 10a buildings. Definitions can be found at www.abcb.gov.au.
Net zero home	a home that achieves a net zero energy value*.
Opening percentage	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
Provisional value	an assumed value that does not represent an actual value. For example, if the wall colour is unspecified in the documentation, a provisional value of 'medium' must be modelled. Acceptable provisional values are outlined in the NatHERS Technical Note and can be found at www.nathers.gov.au
Recommended capacity	this is the capacity or size of equipment that is recommended by NatHERS to achieve the desired comfort conditions in the zone or zones serviced. This is a recommendation and the final selection sizing should be confirmed by a suitably qualified person.
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
Roof window	for NatHERS this is typically an operable window (i.e. can be opened), will have a plaster or similar light well if there is an attic space, and generally does not have a diffuser.
Shading features	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
Solar heat gain coefficient (SHGC)	the fraction of incident solar radiation admitted through a window, both directly transmitted as well as absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's SHGC, the less solar heat it transmits.
Skylight (also known as roof lights)	for NatHERS this is typically a moulded unit with flexible reflective tubing (light well) and a diffuser at ceiling level.

*Refer to glossary.

STCs	Small-scale Technology Certificates, certificates created by the REC registry for renewable energy technologies that may be bought and sold as part of the Small-scale Renewable Energy Scheme operated by the Clean Energy Regulatory
Thermal breaks	are materials with an R-value greater than or equal to 0.2 that must separate the metal frame from the cladding. This includes, but is not limited to, materials such as timber battens greater than or equal to 20mm thick, continuous thermal breaks such as polystyrene insulation sheeting, plastic strips or furring channels.
U-value	the rate of heat transfer through a window. The lower the U-value, the better the insulating ability.
Unconditioned	a zone within a dwelling that is assumed to not require heating and cooling based on standard occupancy assumptions.
Vertical shading features	provides shading to the building in the vertical plane and can be parallel or perpendicular to the subject wall/window. Includes privacy screens, other walls in the building (wing walls), fences, other buildings, vegetation (protected or listed heritage trees).
Window shading device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes horizontal* or vertical shading features* (eg eaves and balconies)

*Refer to glossary.