

# NCC 2022



## ABCB NCC 2022 VOLUME TWO BASIX Thermal Comfort Energy Efficiency Assessment

Accredited Star Rating  
**7.3**

REFERENCE  
**745413\_v4.0**

SITE ADDRESS  
**Lot 302 (#8440) Grasstree Ridge Row MUSWELLBROOK 2333**

DWELLING TYPE  
**Double Storey**

COMMISSIONED BY  
**Metricon Homes**

ASSESSMENT DATE  
**2/04/2025**

Energy Advance Australia Pty. Ltd.  
NatHERS Accreditation Number: DMN/14/1662  
Units 4, 6, 9 #30 Dellamarta Road WANGARA 6065  
PO Box 1436 WANGARA DC 6947  
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# THE SUMMARY

Address	Lot 302 (#8440) Grasstree Ridge Row MUSWELLBROOK Muswellbrook Shire 2333
Dwelling Type	Double Storey
State	New South Wales
Site Exposure	Open
Ground Floor Type	Concrete Slab-on-Ground

NatHERS Climate Zone	65
FirstRate 5 Engine:	Chenath Engine 3.22
Certificate Number	YP91GXDWPL
Accredited Star Rating	7.3

Conditioned Floor Area (m <sup>2</sup> )	487.30
Unconditioned Floor (m <sup>2</sup> )	8.20
Total (m <sup>2</sup> )	495.50

	Area (m2)	Allowance (W/m2)	Total Maximum Watts
Class 1 Total Area	561.87	5.0	2809.4
Class 10a Total Area	42.08	3.0	126.2
Total Outdoor Areas	36.15	4.0	144.6

Maximum Ceiling Insulation Penetration	Maximum Allowance	Maximum Penetration (m2)
	0.50%	2.81

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/m <sup>2</sup> .pa)	Proposed (MJ/m <sup>2</sup> .pa)	Efficiency Benchmark
Heating:	150.0	135.4	Pass: 10.2%
Cooling:	17.9	6.9	Pass: 88.7%
Total:	167.9	142.3	



Certificate No. # YP91GXDWPL

Scan QR code or follow website link for rating details.

Assessor name

Accreditation No.

Property Address

Claude-Francois Sookloll

DMN/14/1662

Lot 302 (#8440) New England Highway MUSWELLBROOK, Muswellbrook Shire 2333, NSW, 2333

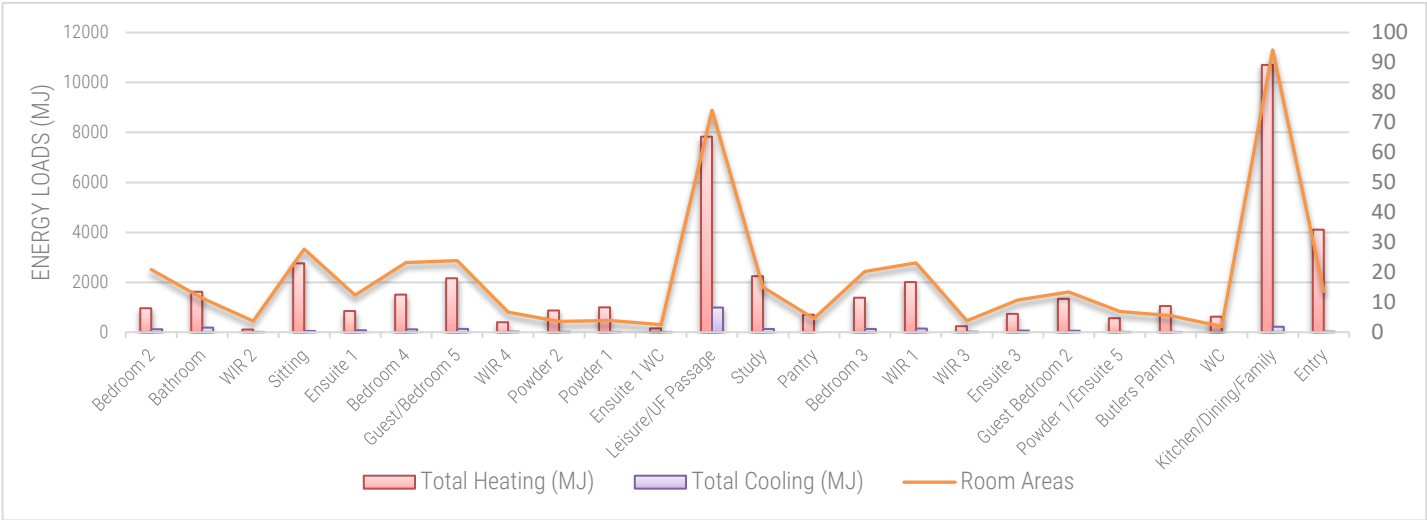
<https://www.fr5.com.au/QRCodeLanding?PublicId=YP91GXDWPL>

# THE ANALYSIS

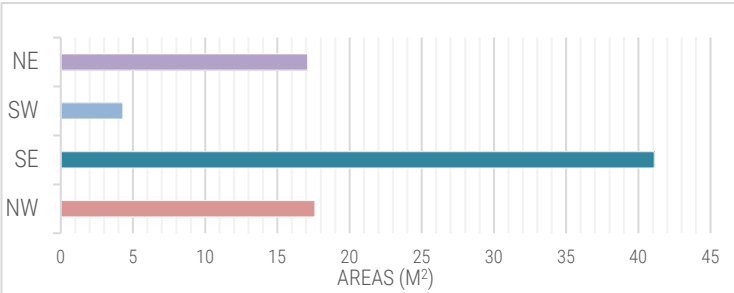
## Dwelling Thermal Performance Per Zone Area

The indicated heating and cooling loads represent the estimated annual energy consumption (in MJ) for this home. A higher load signifies a greater amount of energy required to maintain thermal comfort, highlighting potential areas for efficiency improvement.

Typically, the Room Area line serves as a gauge for anticipated energy usage in a specific area. Deviations from this line can signal better or worse performance than expected, providing insights into the energy efficiency of that space.



## Window and Door Orientations



The chart to the left illustrates the positions of all glazed doors and windows on the home's exterior.

To enhance thermal performance:


1. Increase unsheltered glazing facing north.
2. Limit west-facing glazing to under 5% of the floor area.
3. Keep south-facing glazing under 5% of the floor area, maximizing openable space if possible.
4. Restrict east-facing glazing to less than 8% of the floor area.

Refer to floor /elevation plans for specific shading locations.

## Window/Glazed Door to Floor Area Ratios

### Average Glazing Ratio


16.4 %

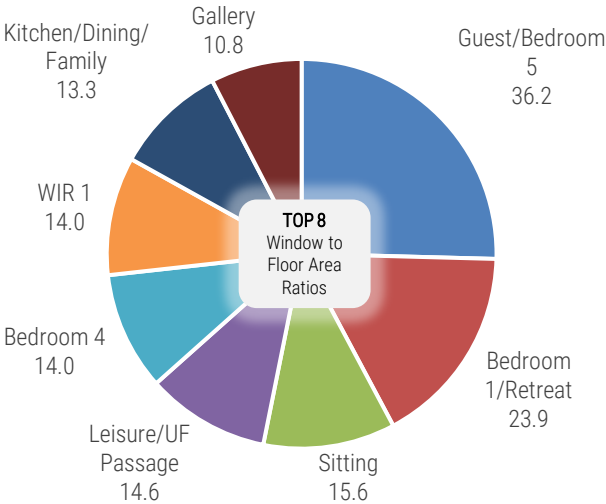


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Assessor name: Claude-Francois Sookloll  
Accreditation No. DMN/14/1662  
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# THE SPECIFICATIONS

## Walls

CONSTRUCTION TYPE AND INSULATION	FRAME TYPE	LOCATION	THERMAL BREAK?
WDF   AAC Panel   R2.5 Insulation   VP Wrap	Timber	External	N/A
WDF INT   Plasterboard Stud Wall   R2.0 Insulation   No Wrap	Timber	Internal	N/A
WDF INT   Plasterboard Stud Wall   Uninsulated   No Wrap	Timber	Internal	N/A
WDF   AAC Panel   Uninsulated   No Wrap	Timber	External	N/A

ADDITIONAL NOTES

Refer to Plans/Drawings for the location of external walls.  
Insulation to the internal Garage, Laundry, Bathroom and WC walls as per drawings

## Roof and Ceiling

CONSTRUCTION TYPE	CEILING INSULATION (R)	SARKING	THERMAL BREAK?	BLANKET (R)
Ceiling with Floor Above	None	No	No	None
Colorbond Flat or Low-Pitched Roof	None	Yes	No	None
Metal Roof OR Tiled Roof w/Sarking	6.0	Yes	No	None

ADDITIONAL NOTES

Solar Absorptance: Dark roof colour

## Floor

CONSTRUCTION TYPE	VENTILATION	FLOOR INSUL (R)	SLAB EDGE (R)	FLOOR AREAS (m <sup>2</sup> )
85mm Concrete   225mm Waffle	Enclosed	Integrated	None	284.0
Framed Suspended Floor   R4.1 Insulation	Enclosed	4.1	None	269.6

ADDITIONAL NOTES

## Glazing

WERS CODE*	CHARACTERISTIC	TYPE	U <sub>w</sub> -VALUE	SHGC <sub>w</sub>	AREA (m <sup>2</sup> )	ADDITIONAL NOTES
TIM-001-01 W	Single	Door	5.40	0.56	16.78	Glazed Timber Doors
SSW-106-01 W	Std Double-Glazing	Awning	2.71	0.48	30.24	Casement Timber Windows
TIM-004-01 W	Std Double-Glazing	Fixed	3.00	0.56	11.53	Fixed Timber Windows
SSW-011-01 A	Std Double-Glazing	Awning	3.79	0.60	18.90	Awning Windows
SSW-010-07 A	Single	Awning	6.26	0.66	2.70	Awning Window: Bath

\*Proxy WERS codes, though not from the original manufacturer, may be used to meet U-Value and SHGC value limitations and are compliant. The U-value of the window or glazed door selected must be lower than the value shown. The SHGC of the window or glazed door selected must be +/- 5% of the value shown (if certified under BASIX then +/-10% is allowable)

PRELIMINARY REPORT



Certificate No. # YP91GXDWPL

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Assessor name

Claude-Francois Sookloll  

Accreditation No.

DMN/14/1662  

Property Address

Lot 302 (#8440) New England  
Highway MUSWELLBROOK,  
Muswellbrook Shire 2333,  
NSW, 2333  

https://www.f15.com.au/QRcodeLanding?PublicId=YP91GXDWPL



# 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—

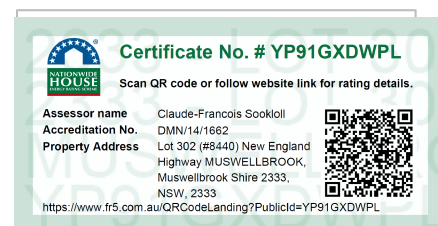
- (a) be protected against the effects of weather and sunlight, and (b) be able to withstand the temperatures within the piping or ductwork; and (c) use thermal insulation material by AS/NZS 4859.1.

## 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.



# 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/m<sup>2</sup> for living areas, and 150 W/m<sup>2</sup> 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/m<sup>2</sup> in a Class 1 building and (b) 4 W/m<sup>2</sup> on a Verandah, balcony or the like attached to a Class 1 building; and (c) 3 W/m<sup>2</sup> 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 m<sup>2</sup> 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.


PRELIMINARY REPORT  
COMPLIANCE STAMP NOT

**Certificate No. # YP91GXDWPL**

Scan QR code or follow website link for rating details.

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<b>Accreditation No.</b>	DMN/14/1662
<b>Property Address</b>	Lot 302 (#8440) New England Highway MUSWELLBROOK, Muswellbrook Shire 2333, NSW, 2333

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## 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 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:

No Whole of Home performance assessment conducted for this certificate.

### Greenhouse gas emissions:

No Whole of Home performance assessment conducted for this certificate.

### Cost:

No Whole of Home performance assessment conducted for this certificate.

### Graph key:



## Predicted onsite renewable energy impact

No Whole of Home performance assessment conducted for this certificate.



## 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
<b>Genuine certificate check</b>					
Does this Certificate match the one available at the web address or QR code verification link on the front page?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the NatHERS certificate number on the NatHERS-stamped plans match the number on this Certificate?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Thermal performance check</b>					
<b>Windows and glazed doors</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>External walls</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the external wall shade (colour) match what is shown in the 'External wall type' table on this Certificate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Floor</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Ceiling penetrations*</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Ceiling</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Roof</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Apartment entrance doors (NCC Class 2 assessments only)</b>					
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.	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<b>Exposure*</b>					
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".	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
<b>Heating and cooling load limits*</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*Refer to glossary.





## Certificate check

Continued

	Approval stage		Construction stage		
	Assessor checked	Consent authority/ surveyor checked	Builder checked	Consent authority/ surveyor checked	Occupancy/other
<b>Additional NCC requirements for thermal performance (not included in the NatHERS assessment)</b>					
<b>Thermal bridging</b>					
Does the dwelling meet the NCC requirement for thermal bridging?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Insulation installation method</b>					
Has the insulation been installed according to the NCC requirements?			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Building sealing</b>					
Does the dwelling meet the NCC requirements for Building Sealing?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Whole of Home performance check (not applicable if a Whole of Home performance assessment is not conducted)</b>					
<b>Appliances</b>					
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Additional NCC Requirements for Services (not included in the NatHERS assessment)</b>					
Does the lighting meet the artificial lighting requirements specified in the NCC?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the hot water system meet the additional requirements specified in the NCC?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Provisional values* check</b>					
Have provisional values* been used in the assessment and, if so, are they noted in 'Additional notes' table below?	<input type="checkbox"/>	<input type="checkbox"/>			

### 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 6

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



## Room *schedule*

Room	Zone Type	Area [m <sup>2</sup> ]
Laundry	unconditioned	8.2
Butlers Pantry	dayTime	5.5
Pantry	dayTime	4.6
Powder 1/Ensuite 5	nightTime	6.9
WC	dayTime	1.9
Entry	dayTime	13.6
Gallery	dayTime	41.6
Kitchen/Dining/Family	kitchen	94.2
Guest Bedroom 2	bedroom	13.4
Guest/Bedroom 5	bedroom	23.9
Sitting	living	27.7
Garage	garage	38.7
Powder 1	dayTime	3.9
Bedroom 1/Retreat	bedroom	38.4
Bedroom 2	bedroom	20.9
Bedroom 3	bedroom	20.3
Bedroom 4	bedroom	23.2
Study	dayTime	15
WIR 1	nightTime	23.1
WIR 4	nightTime	6.7
WIR 3	nightTime	3.8
WIR 2	nightTime	3.7
Leisure/UF Passage	living	74.1
Ensuite 1	nightTime	12.4
Ensuite 3	nightTime	10.7
Powder 2	dayTime	3.6
Bathroom	nightTime	11.4
Ensuite 1 WC	nightTime	2.5

## Window and glazed door *type and performance*

### Default\* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
TIM-001-01 W	Timber A SG Clear	5.4	0.56	0.53	0.59
TIM-004-01 W	Timber B DG Air Fill Clear-Clear	3	0.56	0.53	0.59

\*Refer to glossary.



## Custom\* windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				SHGC lower limit	SHGC upper limit
SSW-106-01 W	Timber Casement Window DG 3/6/3	2.71	0.48	0.46	0.5
SSW-011-01 A	100 Series Awning Window DG 3-12Ar-3	3.79	0.6	0.57	0.63
SSW-010-07 A	100 Series Awning Window SG 3Clr	6.26	0.66	0.63	0.69

Window and glazed door *schedule*

Location	Window ID	Window no.	Height [mm]	Width [mm]	Window type	Opening %	Orientation	Window shading device*
Laundry	TIM-001-01 W	Opening 52	603	820	other	100.0	NW	No
Powder 1/Ensuite 5	SSW-106-01 W	Opening 39	2400	900	casement	90.0	SE	No
Entry	TIM-001-01 W	Opening 44	2455	1855	other	100.0	SE	No
Gallery	TIM-004-01 W	Opening 47	2690	1670	fixed	0.0	NW	No
Kitchen/Dining/-Family	SSW-106-01 W	Opening 46	2400	900	casement	90.0	SW	No
Kitchen/Dining/-Family	SSW-106-01 W	Opening 79	2400	900	casement	90.0	SW	No
Kitchen/Dining/-Family	TIM-001-01 W	Opening 42	2400	1440	other	100.0	SE	No
Kitchen/Dining/-Family	SSW-106-01 W	Opening 43	2400	900	casement	90.0	SE	No
Kitchen/Dining/-Family	TIM-004-01 W	Opening 77	2400	530	fixed	0.0	SE	No
Kitchen/Dining/-Family	TIM-004-01 W	Opening 78	2400	530	fixed	0.0	SE	No
Guest Bedroom 2	TIM-001-01 W	Opening 34	2400	1500	other	100.0	NE	No
Guest/Bedroom 5	SSW-106-01 W	Opening 37	2400	900	casement	90.0	SE	No
Guest/Bedroom 5	SSW-106-01 W	Opening 38	2400	900	casement	90.0	SE	No
Guest/Bedroom 5	SSW-011-01 A	Opening 35	2400	900	awning	60.0	NE	No
Guest/Bedroom 5	SSW-011-01 A	Opening 36	2400	900	awning	60.0	NE	No
Sitting	SSW-106-01 W	Opening 40	2400	900	casement	90.0	SE	No
Sitting	SSW-106-01 W	Opening 41	2400	900	casement	90.0	SE	No
Bedroom 1/Retreat	SSW-106-01 W	Opening 69	1800	900	casement	90.0	SE	No
Bedroom 1/Retreat	SSW-106-01 W	Opening 70	1800	900	casement	90.0	SE	No
Bedroom 1/Retreat	SSW-011-01 A	Opening 72	1800	900	awning	10.0	NE	No

\*Refer to glossary.



Bedroom 1/Retreat	SSW-011-01 A	Opening 73	1800	900	awning	10.0	NE	No
Bedroom 1/Retreat	SSW-011-01 A	Opening 74	1800	1500	awning	45.0	NE	No
Bedroom 2	SSW-011-01 A	Opening 57	1500	900	awning	90.0	NW	No
Bedroom 2	SSW-011-01 A	Opening 58	1500	900	awning	90.0	NW	No
Bedroom 3	SSW-011-01 A	Opening 60	1500	900	awning	90.0	NW	No
Bedroom 3	SSW-011-01 A	Opening 61	1500	900	awning	90.0	NW	No
Bedroom 4	SSW-106-01 W	Opening 64	1800	900	casement	90.0	SE	No
Bedroom 4	SSW-106-01 W	Opening 65	1800	900	casement	90.0	SE	No
Study	SSW-106-01 W	Opening 66	1800	900	casement	90.0	SE	No
WIR 1	SSW-011-01 A	Opening 75	1800	900	awning	10.0	NE	No
WIR 1	SSW-011-01 A	Opening 76	1800	900	awning	10.0	NE	No
Leisure/UF Passage	TIM-004-01 W	Opening 54	2690	1670	fixed	0.0	NW	No
Leisure/UF Passage	SSW-106-01 W	Opening 67	1800	900	casement	90.0	SE	No
Leisure/UF Passage	TIM-001-01 W	Opening 71	2291	2040	other	100.0	SE	No
Ensuite 1	SSW-106-01 W	Opening 68	1800	900	casement	10.0	SE	No
Ensuite 3	SSW-106-01 W	Opening 80	1800	900	casement	10.0	SE	No
Bathroom	SSW-010-07 A	Opening 59	1500	1800	awning	10.0	NW	No

Roof window\* type and performance value

Default\* roof windows

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

Custom\* roof windows

Window ID	Window description	Maximum U-value*	SHGC*	Substitution tolerance ranges	
				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*

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
Laundry	1797	820	100.0	NW
Garage	2408	4810	100.0	NE
Garage	2400	820	100.0	SW

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade [colour]	Bulk insulation [R-value]	Reflective wall wrap*
1	NCC 2022 VAPOUR - TIMBER - WDF   AAC Panel   R2.5 Insulation   VP Wrap	0.5	Medium	Glass fibre batt: R2.5 (R2.5)	No
2	NCC 2022 STANDARD - TIMBER - WDF   AAC Panel   Uninsulated   No Wrap	0.5	Medium		No
3	NCC 2022 STANDARD - TIMBER - WDF INT   Plasterboard Stud Wall   Uninsulated   No Wrap	0.5	Medium		No

External wall *schedule*

Location	Wall ID	Height [mm]	Width [mm]	Orientation	Horizontal shading feature* maximum projection [mm]	Vertical shading feature* (yes/no)
Laundry	1	3000	1441	NE	0	Yes
Laundry	1	3000	2011	NW	0	Yes
Butlers Pantry	1	3000	2868	NW	0	Yes
Powder 1/Ensuite 5	1	3000	181	SE	1966	Yes
Powder 1/Ensuite 5	1	3000	616	SE	1966	Yes
Powder 1/Ensuite 5	1	3000	2060	SE	1563	Yes
Entry	1	3000	2943	SE	1967	Yes
Gallery	1	3000	5034	NW	0	Yes
Kitchen/Dining/Family	1	3000	11273	SW	0	No
Kitchen/Dining/Family	1	3000	7345	SE	1565	Yes
Kitchen/Dining/Family	1	3000	8912	NW	0	Yes
Guest Bedroom 2	1	3000	2771	NE	810	Yes
Guest/Bedroom 5	1	3000	5704	SE	1555	Yes
Guest/Bedroom 5	1	3000	3661	NE	807	Yes
Guest/Bedroom 5	1	3000	428	NE	807	No



Sitting	1	3000	5135	SE	1564	Yes
Sitting	1	3000	616	SE	1967	Yes
Sitting	1	3000	228	SE	1967	Yes
Garage	2	3075	418	NE	810	No
Garage	2	3075	6023	NE	810	Yes
Garage	2	3075	6011	NW	0	No
Garage	2	3075	3812	SW	0	Yes
Bedroom 1/Retreat	1	2700	4963	SE	0	No
Bedroom 1/Retreat	1	2700	7098	NE	0	No
Bedroom 2	1	2700	1446	NE	4800	Yes
Bedroom 2	1	2700	4857	NW	0	No
Bedroom 3	1	2700	4908	NW	0	No
Bedroom 3	1	2700	3836	SW	0	No
Bedroom 4	1	2700	4906	SE	0	No
Bedroom 4	1	2700	3831	SW	0	No
Study	1	2700	3190	SE	0	No
WIR 1	1	2700	4057	NE	0	No
WIR 1	1	2700	6014	NW	0	No
WIR 1	1	2700	1446	SW	4800	Yes
WIR 4	1	2700	2129	SW	0	No
WIR 3	1	2700	1209	SW	0	No
Leisure/UF Passage	1	3077	5029	NW	1440	Yes
Leisure/UF Passage	1	2700	2008	SE	0	Yes
Leisure/UF Passage	1	2700	222	SE	0	No
Leisure/UF Passage	1	2700	219	SW	0	Yes
Leisure/UF Passage	1	2700	401	SE	600	Yes
Leisure/UF Passage	1	2700	3535	SE	600	Yes
Leisure/UF Passage	3	2700	220	NE	0	Yes
Ensuite 1	1	2700	2092	SE	0	No
Ensuite 3	1	2700	2280	SE	0	No
Bathroom	1	2700	4079	NW	0	No
Ensuite 1 WC	1	2700	451	SE	0	Yes
Ensuite 1 WC	1	2700	612	SE	0	Yes

## Internal wall type

Wall ID	Wall type	Area [m²]	Bulk insulation
1	NCC 2022 STANDARD - TIMBER - WDF INT   Plasterboard Stud Wall   R2.0 Insulation   No Wrap	89.9	Glass fibre batt: R2.0 (R2.0)





2

NCC 2022 STANDARD - TIMBER - WDF INT |  
Plasterboard Stud Wall | Uninsulated | No Wrap

377.6

## Floor type

Location	Construction	Area [m²]	Sub-floor ventilation	Added insulation [R-value]	Covering
Laundry	FLOOR - 85mm Concrete   225mm Waffle	8.2	Enclosed	R0.0	Tiles
Butlers Pantry	FLOOR - 85mm Concrete   225mm Waffle	5.5	Enclosed	R0.0	Tiles
Pantry	FLOOR - 85mm Concrete   225mm Waffle	4.6	Enclosed	R0.0	Tiles
Powder 1/Ensuite 5	FLOOR - 85mm Concrete   225mm Waffle	6.9	Enclosed	R0.0	Tiles
WC	FLOOR - 85mm Concrete   225mm Waffle	1.9	Enclosed	R0.0	Tiles
Entry	FLOOR - 85mm Concrete   225mm Waffle	13.6	Enclosed	R0.0	Tiles
Gallery	FLOOR - 85mm Concrete   225mm Waffle	41.6	Enclosed	R0.0	Tiles
Kitchen/Dining/F- amily	FLOOR - 85mm Concrete   225mm Waffle	94.2	Enclosed	R0.0	Tiles
Guest Bedroom 2	FLOOR - 85mm Concrete   225mm Waffle	13.4	Enclosed	R0.0	Tiles
Guest/Bedroom 5	FLOOR - 85mm Concrete   225mm Waffle	23.9	Enclosed	R0.0	Carpet
Sitting	FLOOR - 85mm Concrete   225mm Waffle	27.7	Enclosed	R0.0	Carpet
Garage	FLOOR - 85mm Concrete   225mm Waffle	14.1	Enclosed	R0.0	none
Garage	FLOOR - 85mm Concrete   225mm Waffle	24.6	Enclosed	R0.0	none
Powder 1	FLOOR - 85mm Concrete   225mm Waffle	3.9	Enclosed	R0.0	Tiles
Bedroom 1/Retreat	FLOOR - Framed Suspended Floor   R4.1 Insulation	38.4	Enclosed	R4.1	Carpet
Bedroom 2	FLOOR - Framed Suspended Floor   R4.1 Insulation	20.9	Enclosed	R4.1	Carpet
Bedroom 3	FLOOR - Framed Suspended Floor   R4.1 Insulation	20.3	Enclosed	R4.1	Carpet
Bedroom 4	FLOOR - Framed Suspended Floor   R4.1 Insulation	23.2	Enclosed	R4.1	Carpet

\*Refer to glossary.

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Study	FLOOR - Framed Suspended Floor   R4.1 Insulation	15	Enclosed	R4.1	Carpet
WIR 1	FLOOR - Framed Suspended Floor   R4.1 Insulation	23.1	Enclosed	R4.1	Carpet
WIR 4	FLOOR - Framed Suspended Floor   R4.1 Insulation	6.7	Enclosed	R4.1	Carpet
WIR 3	FLOOR - Framed Suspended Floor   R4.1 Insulation	3.8	Enclosed	R4.1	Carpet
WIR 2	FLOOR - Framed Suspended Floor   R4.1 Insulation	3.7	Enclosed	R4.1	Carpet
Leisure/UF Passage	FLOOR - Framed Suspended Floor   R4.1 Insulation	74.1	Enclosed	R4.1	Carpet
Ensuite 1	FLOOR - Framed Suspended Floor   R4.1 Insulation	12.4	Enclosed	R4.1	Tiles
Ensuite 3	FLOOR - Framed Suspended Floor   R4.1 Insulation	10.7	Enclosed	R4.1	Tiles
Powder 2	FLOOR - Framed Suspended Floor   R4.1 Insulation	3.6	Enclosed	R4.1	Tiles
Bathroom	FLOOR - Framed Suspended Floor   R4.1 Insulation	11.4	Enclosed	R4.1	Tiles
Ensuite 1 WC	FLOOR - Framed Suspended Floor   R4.1 Insulation	2.5	Enclosed	R4.1	Tiles

### Ceiling type

Location	Construction material/type	Bulk insulation R-value [may include edge batt values]	Reflective wrap*
Laundry	FLOOR - Framed Suspended Floor   R4.1 Insulation	R4.1	No
Butlers Pantry	FLOOR - Framed Suspended Floor   R4.1 Insulation	R4.1	No
Pantry	FLOOR - Framed Suspended Floor   R4.1 Insulation	R4.1	No
Powder 1/Ensuite 5	FLOOR - Framed Suspended Floor   R4.1 Insulation	R4.1	No

\*Refer to glossary.



WC	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Entry	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Gallery	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Kitchen/Dining/F-amily	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Guest Bedroom 2	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Guest/Bedroom 5	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Sitting	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Garage	Plasterboard R0.0	No
Garage	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Powder 1	FLOOR - Framed Suspended Floor   R4.1 R4.1 Insulation	No
Bedroom 1/Retreat	Plasterboard R6.0	Yes
Bedroom 2	Plasterboard R6.0	Yes
Bedroom 3	Plasterboard R6.0	Yes
Bedroom 4	Plasterboard R6.0	Yes
Study	Plasterboard R6.0	Yes
WIR 1	Plasterboard R6.0	Yes
WIR 4	Plasterboard R6.0	Yes
WIR 3	Plasterboard R6.0	Yes
WIR 2	Plasterboard R6.0	Yes
Leisure/UF Passage	Plasterboard R6.0	Yes
Ensuite 1	Plasterboard R6.0	Yes
Ensuite 3	Plasterboard R6.0	Yes
Powder 2	Plasterboard R6.0	Yes
Bathroom	Plasterboard R6.0	Yes
Ensuite 1 WC	Plasterboard R6.0	Yes

### Ceiling penetrations\*

\*Refer to glossary.



Location	Quantity	Type	Height [mm]	Width [mm]	Sealed/unsealed
Powder 1/Ensuite 5	1	Exhaust Fans	250	250	Sealed
WC	1	Exhaust Fans	250	250	Sealed
Kitchen/Dining/Family	1	Exhaust Fans	250	250	Sealed
Ensuite 1	1	Exhaust Fans	250	250	Sealed
Ensuite 3	1	Exhaust Fans	250	250	Sealed
Powder 2	1	Exhaust Fans	250	250	Sealed
Bathroom	1	Exhaust Fans	250	250	Sealed

## Ceiling fans

Location	Quantity	Diameter [mm]
No Data Available		

## Roof type

Construction	Added insulation [R-value]	Solar absorptance	Roof shade [colour]
Framed:Flat - Flat Framed (Metal Deck)	0.0	0.85	Dark
Cont:Attic-Continuous	0.0	0.85	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]
No Data Available				

## 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

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.	

## 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

<b>Annual energy load</b>	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
<b>AFRC</b>	Australian Fenestration Rating Council
<b>Assessed floor area</b>	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.
<b>Ceiling penetrations</b>	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.
<b>Conditioned</b>	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.
<b>COP</b>	Coefficient of performance
<b>Custom windows</b>	windows listed in NatHERS software that are available on the market in Australia and have a WERS (Window Energy Rating Scheme) rating.
<b>Default windows</b>	windows that are representative of a specific type of window product and whose properties have been derived by statistical methods.
<b>EER</b>	Energy Efficiency Ratio, measure of how much cooling can be achieved by an air conditioner for a single kWh of electricity input
<b>Energy use</b>	This is your homes rating without solar or batteries.
<b>Energy value</b>	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).
<b>Entrance door</b>	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.
<b>Exposure category – exposed</b>	terrain with no obstructions e.g. flat grazing land, ocean-frontage, desert, exposed high-rise unit (usually above 10 floors).
<b>Exposure category – open</b>	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).
<b>Exposure category – suburban</b>	terrain with numerous, closely spaced obstructions below 10m e.g. suburban housing, heavily vegetated bushland areas.
<b>Exposure category – protected</b>	terrain with numerous, closely spaced obstructions over 10 m e.g. city and industrial areas.
<b>Horizontal shading feature</b>	provides shading to the building in the horizontal plane, e.g. eaves, verandahs, pergolas, carports, or overhangs or balconies from upper levels.
<b>National Construction Code (NCC) Class</b>	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 <a href="http://www.abcb.gov.au">www.abcb.gov.au</a> .
<b>Net zero home</b>	a home that achieves a net zero energy value*.
<b>Opening percentage</b>	the openability percentage or operable (moveable) area of doors or windows that is used in ventilation calculations.
<b>Provisional value</b>	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 <a href="http://www.nathers.gov.au">www.nathers.gov.au</a>
<b>Recommended capacity</b>	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.
<b>Reflective wrap (also known as foil)</b>	can be applied to walls, roofs and ceilings. When combined with an appropriate air gap and emissivity value, it provides insulative properties.
<b>Roof window</b>	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.
<b>Shading features</b>	includes neighbouring buildings, fences, and wing walls, but excludes eaves.
<b>Solar heat gain coefficient (SHGC)</b>	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.
<b>Skylight (also known as roof lights)</b>	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)