ENERGY EFFICIENCY REPORT

BASIX® Thermal Comfort Simulation Assessment

SITE ADDRESS
Lot 6 (#48) Hendy Avenue PANANIA 2213

LOCAL GOVERNMENT AUTHORITY
Canterbury Bankstown Council

DEPOSITED PLAN
36587

CLIENT
Mr. Jaime Jacob & Mrs. Ann Rinu Jacob

DWELLING TYPE
Single Storey

COMMISSIONED BY
McDonald Jones Homes

REFERENCE NUMBER
606379_v3.0

ASSESSMENT DATE
4/04/2022

energy@energyadvance.com.au | energy advance australia pty. ltd. | acn: 60 933 2014 | 1300 850 228 | Units 4 & 6/30 dellamarta road wangara 6065

PROJECT CERTIFICATION SUMMARY

DESIGN AND APPROVED SOFTWARE INFORMATION

SIMULATION ENGINE	Chenath Engine v3.21
EXPOSURE	Suburban
ORIENTATION:	288
NatHERS CLIMATE ZONE:	56
BCA (NCC) CLIMATE ZONE:	5

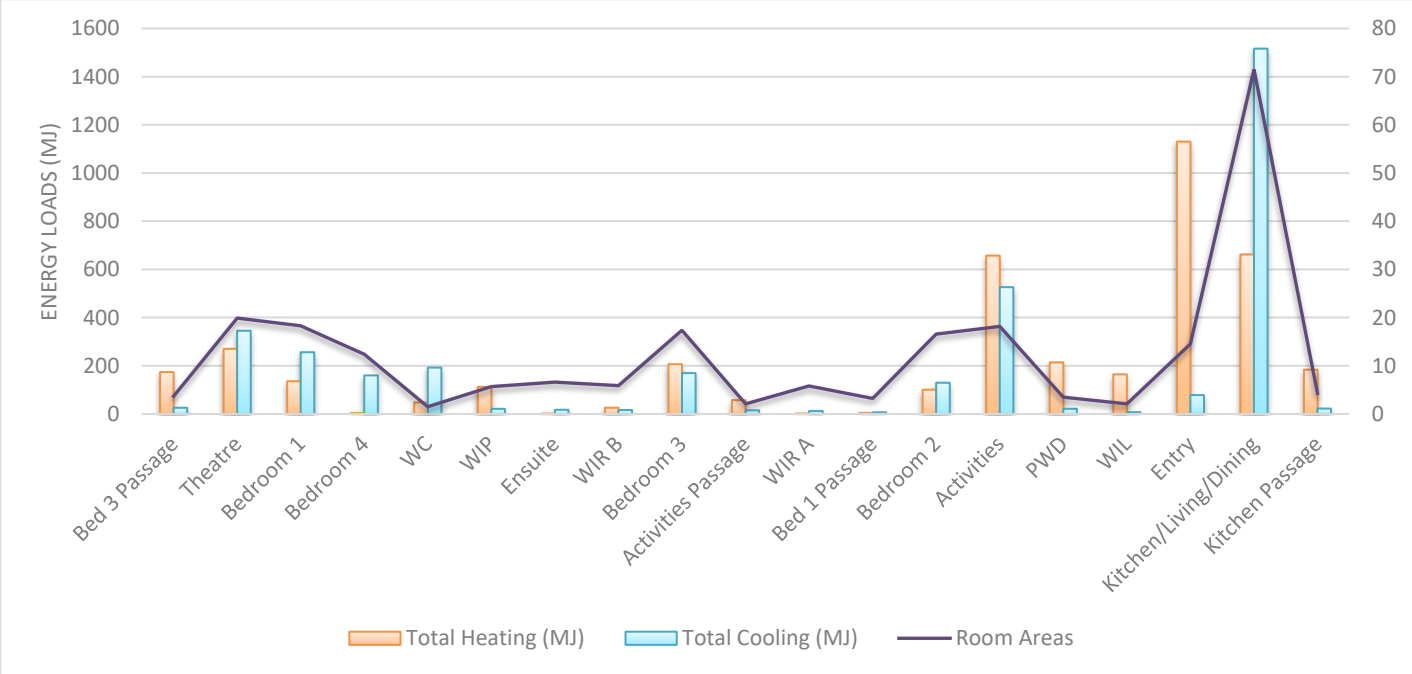
Dwelling Areas (m^2)	
INTERNAL AREAS (m^2)	273.35
OUTDOOR AREAS (m^2)	17.95
GARAGE/CARPORT (m^2)	36.26
TOTAL:	**327.56**

ASSESSMENT CALCULATIONS & SOFTWARE RESULTS

TARGET	($MJ/m^2.pa$)	PROPOSED	($MJ/m^2.pa$)	BUILD EFFICIENCY BENCHMARK	
Heating:	40.0	Heating:	18.3	**PASS:**	74.4%
Cooling:	26.0	Cooling:	15.9	**PASS:**	48.2%
Total:	**66.0**	**Total:**	**34.2**		

DWELLING THERMAL PERFORMANCE PER ZONED AREAS

The heating and cooling loads indicated are the simulated annual energy usages (MJ) for this home. The higher the load, the more energy needed to achieve thermal comfort.



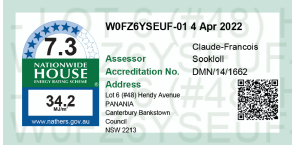
STATEMENT OF COMPLIANCE

I / We certify that we are specialists in the relevant discipline and the following design documents comply with the relevant requirements of the National Construction Code (NCC Volume One/Two as applicable) in relation to thermal performance and the relevant Australian Standards specified in this report.

ASSESSOR NAME: C. Sookloll
SIGNATURE: C Sookloll

RELEVANT QUALIFICATION STATEMENT

Certifiicate IV in NatHERS Assessment (Credential Number: TRF0002560)
Residential Building Thermal Performance Assessment (91318NSW) Course
Assessor Accrediting Organisation (AAO) Accreditation Number: **VIC/BDAV/14/1662 | ABSA/61846**



BUILDING SPECIFICATION SUMMARY

EXTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
EXTERNAL WALLS	Brick Masonry	None	To the Front Elevation Garage wall (as per drawings)
	Brick Veneer	None	To the remaining Garage walls
	Brick Veneer	R2.0 Batts	Throughout the remaindeR

ADDITIONAL NOTES Location of Construction Materials as per drawings

INTERNAL WALLS

	CONSTRUCTION TYPE	INSULATION	NOTES
INTERNAL WALLS	Framed	R2.0 Batts	To the Garage internal walls only
	Framed	None	Throughout the remaining internal walls

ADDITIONAL NOTES

ROOF AND CEILING

	CONSTRUCTION TYPE	INSULATION	NOTES
ROOF	Colorbond (ventilated)	Sarking	Approx. 26"00' Roof Pitch
CEILING	Plasterboard	R4.1 Insulation	Main House Area Only
	Plasterboard	None	Garage Ceiling Area

ADDITIONAL NOTES Location of ceiling insulation as per drawings | Roof modelled as unventilated as per NatHERS tech notes

FLOOR

	CONSTRUCTION TYPE	INSULATION	NOTES
FLOOR	225mm Waffle	85mm Slab	Integrated	Throughout the Ground Floor

ADDITIONAL NOTES Floor Coverings modelled as per Drawings and NatHERS Protocols

GLASS TYPE	COLOUR	FRAME	U_w VALUE	SHGC	NOTES
Standard	Clear	Aluminium	6.54	0.67	Awning Windows
Standard	Clear	Aluminium	6.43	0.76	Sliding Windows
Standard	Clear	Aluminium	6.24	0.74	Stacker Door
Standard	Clear	Aluminium	6.23	0.73	Double Hung Windows
Standard	Clear	Aluminium	6.19	0.74	Sliding Door

Note: Only a +/-5% SHGC tolerance is allowed with this rating. NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated in the report. If any of the windows selected are outside the 5% tolerance then this certificate is no dwelling will need to be rerated to confirm compliance.

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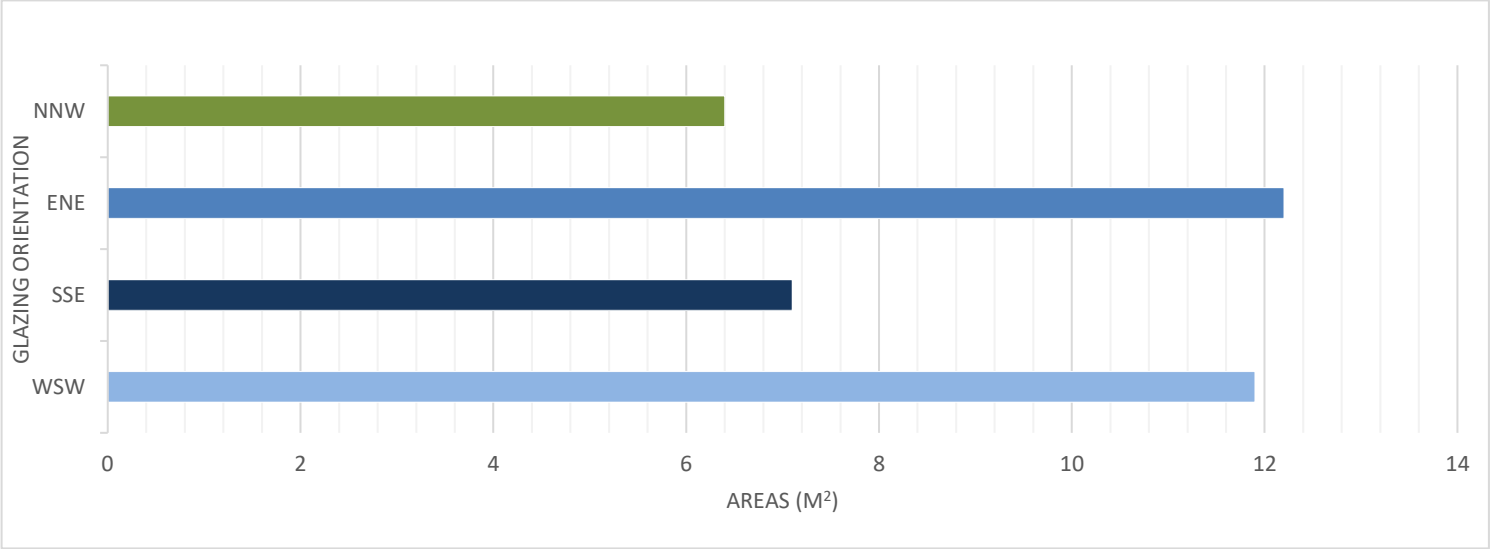
GLAZING AREA DIRECTIONS



The chart above indicates the direction of all glazed doors and windows on the external envelope of the dwelling. To increase the thermal performance of the dwelling:

1. *Maximise unsheltered northern-aspect glazing.*
2. *Keep west-facing glazing as small as possible: total window area should be less than 5% of the home's total floor area.*
3. *Keep south-facing glazing reasonably small: total window area should be less than 5% of the home's total floor area. Maximise the openable area if possible.*
4. *Keep east-facing glazing to a modest size: total window area should be less than 8% of the home's total floor area*

Refer to the floor and elevation plans for shading location

LIGHTING/PENETRATION CALCULATIONS

ARTIFICIAL LIGHTING CALCULATION ALLOWANCES

AREA WITHIN THE CLASS 1 BUILDING	**273.35 m²**		
Development Total	1366.8 Watts	Area Wattage Allowance	5.0 W/m²
AREA WITHIN THE CLASS 10 BUILDING	**36.26 m²**		
Development Total	108.8 Watts	Area Wattage Allowance	3.0 W/m²
AREA WITHIN THE OUTDOOR AREAS	**17.95 m²**		
Development Total	71.8 Watts	Area Wattage Allowance	4.0 W/m²

CEILING INSULATION PENETRATION ALLOWANCE

CLASS 1 MAXIMUM PENETRATION ALLOWANCE	CLASS 1 MAXIMUM PENETRATION AREA (m²)
0.5% TOTAL INSULATED CEILING AREA	**1.37**

The clearance required around downlights by "Australian Standard AS/NZS 3000 – 2007 Electrical Installations" (AS/NZS 3000), introduces a significant area of uninsulated ceiling and therefore increases heat loss and gain through the ceiling.

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, then there is no need to allow for the ceiling penetration

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NSW ADDITIONS: BUILDING FABRIC THERMAL INSULATION

NSW 3.12.1 APPLICATION OF NSW PART 3.12.1

(a) Compliance with NSW 3.12.1.1 satisfies NSW P2.6.1(a) for thermal insulation and thermal breaks.

(b) NSW PART 3.12.1 only applies to thermal insulation in a Class 1 or 10 building where a development consent specifies that the insulation is to be provided as part of the development.

(c) In (b), the term development consent has the meaning given by the Environmental Planning and Assessment Act 1979.

(d) The Deemed-to-Satisfy Provisions of this Part for thermal breaks apply to all Class 1 buildings and Class 10a buildings with a conditioned space.

NSW 3.12.1.1 COMPLIANCE WITH BCA PROVISIONS

(a) Thermal insulation in a building must comply with the national BCA provisions of 3.12.1.1.

(b) A thermal break must be provided between the external cladding and framing in accordance with national BCA provisions of—

(i) 3.12.1.2(c) for a metal framed roof; and
(ii) 3.12.1.4(b) for a metal framed wall.

(c) Compensation for reduction in ceiling insulation must comply with the national BCA provisions of 3.12.1.2(e).

(d) A floor with an in-slab or in-screed heating or cooling system must comply with the national BCA provisions of—

(i) 3.12.1.5(a)(ii), (iii) and (e) for a suspended floor; or
(ii) 3.12.1.5(c), (d) and (e) for a concrete slab-on-ground.

BUILDING SEALING & SERVICES

NSW 3.12.3 APPLICATION OF NSW PART 3.12.3

(a) Compliance with NSW 3.12.3.1 satisfies NSW P2.6.1(b) for building sealing.

(b) NSW Part 3.12.3 is not applicable to—

(i) existing buildings being relocated; or
(ii) Class 10a buildings—
(A) without a conditioned space; or
(B) for the accommodation of vehicles; or
(iii) parts of buildings that cannot be fully enclosed; or

(iv) a permanent building opening, in a space where a gas appliance is located, that is necessary for the safe operation of a gas appliance; or

(v) a building in climate zones 2 and 5 where the only means of air-conditioning is by using an evaporative cooler.

NSW 3.12.3.1 COMPLIANCE WITH BCA PROVISIONS

The sealing of a building must comply with the national BCA provisions 3.12.3.1 to 3.12.3.6.

NSW 3.12.5 SERVICES: APPLICATION OF NSW PART 3.12.5

(a) Compliance with NSW 3.12.5.1 satisfies NSW P2.6.2 for services.

(b) NSW Part 3.12.5 is not applicable to existing services associated with existing buildings being relocated.

NSW 3.12.5.1 COMPLIANCE WITH BCA PROVISIONS

Services must comply with the national BCA provisions 3.12.5.0 to 3.12.5.3.

Nationwide House Energy Rating Scheme
NatHERS Certificate No. W0FZ6YSEUF-01

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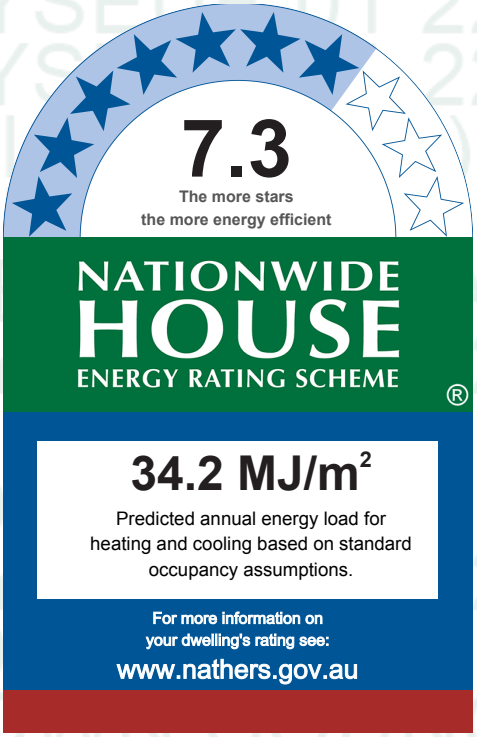

Property

Address	Lot 6 (#48) Hendy Avenue PANANIA, Canterbury Bankstown Council, NSW, 2213
Lot/DP	6 / 36587
NCC Class*	Class 1a
Type	New Home

Plans

Main plan	606379
Prepared by	McDonald Jones Homes

Construction and environment

Assessed floor area (m²)*	
Conditioned*	233.4
Unconditioned*	49.6
Total	283
Garage	33.1

Exposure type
suburban

NatHERS climate zone
56 Mascot AMO

Thermal performance

Heating	Cooling
18.3 MJ/m²	**15.9** MJ/m²

About the rating
NatHERS software models the expected thermal energy loads using information about the design and construction, climate and common patterns of household use. The software does not take into account appliances, apart from the airflow impacts from ceiling fans.

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	Declaration completed: no conflicts

Verification

To verify this certificate, scan the QR code or visit https://www.fr5.com.au/QRCodeLanding?PublicId=W0FZ6YSEUF-01 When using either link, ensure you are visiting www.FR5.com.au.

National Construction Code (NCC) requirements

The NCC's requirements for NatHERS-rated houses are detailed in 3.12.0(a)(i) and 3.12.5 of the NCC Volume Two. For apartments the requirements are detailed in J0.2 and J5 to J8 of the NCC Volume One.

In NCC 2019, these requirements include minimum star ratings and separate heating and cooling load limits that need to be met by buildings and apartments through the NatHERS assessment. Requirements additional to the NatHERS assessment that must also be satisfied include, but are not limited to: insulation installation methods, thermal breaks, building sealing, water heating and pumping, and artificial lighting requirements. The NCC and NatHERS Heating and Cooling Load Limits (Australian Building Codes Board Standard) are available at www.abcb.gov.au.

State and territory variations and additions to the NCC may also apply.

* Refer to glossary.

Certificate Check

Ensure the dwelling is designed and then built as per the NatHERS Certificate. While you need to check the accuracy of the whole Certificate, the following spot check covers some important items impacting the dwelling's rating.

Genuine certificate

Does this Certificate match the one available at the web address or QR code in the verification box on the front page? Does the set of NatHERS-stamped plans for the dwelling have a Certificate number on the stamp that matches this Certificate?

Ceiling penetrations*

Does the 'number' and 'type' of ceiling penetrations (e.g. downlights, exhaust fans, etc) shown on the stamped plans or installed, match what is shown in this Certificate?

Windows

Does the installed window meet the substitution tolerances (SHGC and U-value) and window type, of the window shown on this Certificate? Substituted values must be based on the Australian Fenestration Rating Council (AFRC) protocol.

Apartment entrance doors

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 level (terrain) been applied? For example, it is unlikely that a ground-floor apartment is "exposed" or a top floor high-rise apartment is "protected".

Provisional* values

Have provisional values been used in the assessment and, if so, noted in "additional notes" below?

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

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
No Data Available					

Custom* windows

				Substitution tolerance ranges	
Window ID	**Window description**	**Maximum U-value***	**SHGC***	SHGC lower limit	SHGC upper limit
BRD-001-01 A	ESS Sliding Window (52mm) SG 3Clr	6.43	0.76	0.72	0.8
BRD-024-34 A	ESS Double Hung Window (52mm) SG 4mmClr	6.23	0.73	0.69	0.77
BRD-112-01 A	ESS Awning 52 SG 4mmClr	6.54	0.67	0.64	0.7

* Refer to glossary.

BRD-139-01 A	Essential Sliding Stacker Door SG 4mmClr	6.24	0.74	0.7	0.78
BRD-033-01 A	ESS Sliding Door (80mm) SG 4Clr	6.19	0.74	0.7	0.78

Window and glazed door *Schedule*

Location	Window ID	Window no.	Height (mm)	Width (mm)	Window type	Opening %	Orientation	Window shading device*
Bedroom 1	BRD-001-01 A	W15	860	3010	sliding	45.0	WSW	No
Bedroom 2	BRD-024-34 A	W1	2080	850	double_hung	45.0	SSE	No
Bedroom 2	BRD-024-34 A	W2	2080	850	double_hung	45.0	SSE	No
Bedroom 3	BRD-024-34 A	W3	2080	850	double_hung	45.0	SSE	No
Bedroom 3	BRD-024-34 A	W4	2080	850	double_hung	45.0	SSE	No
Bedroom 4	BRD-112-01 A	W7	1460	610	awning	90.0	ENE	No
Bedroom 4	BRD-112-01 A	W8	1460	610	awning	90.0	ENE	No
Theatre	BRD-001-01 A	W9	400	1650	sliding	45.0	ENE	No
Theatre	BRD-001-01 A	W10	600	2650	sliding	45.0	NNW	No
Activities	BRD-001-01 A	W6	2080	2170	sliding	30.0	ENE	No
Kitchen/Living/-Dining	BRD-112-01 A	W12	2080	850	awning	60.0	NNW	No
Kitchen/Living/-Dining	BRD-112-01 A	W13	2080	850	awning	60.0	NNW	No
Kitchen/Living/-Dining	BRD-139-01 A	D3	2100	2688	sliding	60.0	WSW	No
Laundry	BRD-033-01 A	D2	2100	1470	sliding	45.0	ENE	No
PWD 2	BRD-112-01 A	W11	2080	610	awning	60.0	NNW	No
WC	BRD-112-01 A	W14	2080	850	awning	60.0	WSW	No
Bath	BRD-001-01 A	W5	1200	1810	sliding	45.0	ENE	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)	Orientation	Outdoor shade	Indoor shade
No Data Available							

* Refer to glossary.

Skylight *type and performance*

Skylight ID	Skylight description
No Data Available	

Skylight *schedule*

Location	Skylight ID	Skylight No.	Skylight shaft length (mm)	Area (m²)	Orient-ation	Outdoor shade	Diffuser	Skylight shaft reflectance
No Data Available								

External door *schedule*

Location	Height (mm)	Width (mm)	Opening %	Orientation
Entry	2406	1267	100.0	SSE
Garage	2350	4820	100.0	SSE

External wall *type*

Wall ID	Wall type	Solar absorptance	Wall shade (colour)	Bulk insulation (R-value)	Reflective wall wrap*
1	STANDARD - Brick Veneer - R2.0 Batts	0.5	Medium	Glass fibre batt: R2.0 (R2.0)	No
2	STANDARD - Brick Veneer	0.5	Medium		No
3	STANDARD - Double Brick	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)
Bedroom 1	1	2745	4250	WSW	600	Yes
Bedroom 2	1	2745	2063	WSW	2320	Yes
Bedroom 2	1	2745	3200	SSE	602	No
Bedroom 2	1	2745	710	ENE	600	Yes
Bedroom 3	1	2745	3070	SSE	600	Yes
Bedroom 3	1	2745	5860	ENE	600	Yes
Bedroom 4	1	2745	3350	ENE	600	Yes
Theatre	1	2745	4595	ENE	600	Yes
Theatre	1	2745	4335	NNW	600	Yes
WIR B	1	2745	3835	WSW	600	Yes
Activities	1	2745	3675	ENE	600	Yes
Entry	1	2745	1675	SSE	2665	Yes
Kitchen/Living/Dining	1	2745	7574	NNW	603	Yes
Kitchen/Living/Dining	1	2745	5248	WSW	4170	Yes
Laundry	1	2745	1637	ENE	600	Yes
PWD 2	1	2745	1660	NNW	600	Yes
WC	1	2745	1710	WSW	600	Yes
Bath	1	2745	2070	ENE	600	Yes

* Refer to glossary.

Garage	2	3088	5580	WSW	0	Yes
Garage	3	3088	5550	SSE	1981	Yes
Garage	2	3088	705	ENE	0	Yes

Internal wall *type*

Wall ID	Wall type	Area (m²)	Bulk insulation
1	STANDARD - Internal Stud Walls	289.5	
2	STANDARD - Internal Stud Walls -R2.0 Batts	38.3	Glass fibre batt: R2.0 (R2.0)

Floor *type*

Location	Construction	Area (m²)	Sub-floor ventilation	Added insulation (R-value)	Covering
Bedroom 1	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	18.3	Enclosed	R0.0	Timber
Bedroom 2	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	16.6	Enclosed	R0.0	Timber
Bedroom 3	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	17.4	Enclosed	R0.0	Timber
Bedroom 4	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	12.4	Enclosed	R0.0	Timber
Theatre	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	19.9	Enclosed	R0.0	Timber
Bed 1 Passage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3.2	Enclosed	R0.0	Timber
WIR A	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	5.8	Enclosed	R0.0	Timber
WIR B	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	5.9	Enclosed	R0.0	Timber
Activities	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	18.2	Enclosed	R0.0	Timber
Entry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	14.5	Enclosed	R0.0	Timber
Bed 3 Passage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3.7	Enclosed	R0.0	Timber
WIL	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	2.1	Enclosed	R0.0	Timber
Activities Passage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	2.1	Enclosed	R0.0	Timber
WIP	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	5.7	Enclosed	R0.0	Timber
Kitchen Passage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	4.3	Enclosed	R0.0	Timber
Kitchen/Living/D-ining	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	71.5	Enclosed	R0.0	Timber
Laundry	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	6.1	Enclosed	R0.0	Tiles
PWD 2	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3.5	Enclosed	R0.0	Tiles
WC	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	1.5	Enclosed	R0.0	Tiles
Ensuite	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	6.6	Enclosed	R0.0	Tiles
PWD	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	3.5	Enclosed	R0.0	Tiles
Bath	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	6.9	Enclosed	R0.0	Tiles
Garage	FR5 - 225mm waffle pod, 85mm concrete (R0.60)	33.1	Enclosed	R0.0	none

Ceiling *type*

Location	Construction material/type	Bulk insulation R-value (may include edge batt values)	Reflective wrap*
Bedroom 1	Plasterboard	R4.1	Yes
Bedroom 2	Plasterboard	R4.1	Yes
Bedroom 3	Plasterboard	R4.1	Yes

* Refer to glossary.

Bedroom 4	Plasterboard	R4.1	Yes
Theatre	Plasterboard	R4.1	Yes
Bed 1 Passage	Plasterboard	R4.1	Yes
WIR A	Plasterboard	R4.1	Yes
WIR B	Plasterboard	R4.1	Yes
Activities	Plasterboard	R4.1	Yes
Entry	Plasterboard	R4.1	Yes
Bed 3 Passage	Plasterboard	R4.1	Yes
WIL	Plasterboard	R4.1	Yes
Activities Passage	Plasterboard	R4.1	Yes
WIP	Plasterboard	R4.1	Yes
Kitchen Passage	Plasterboard	R4.1	Yes
Kitchen/Living/D-ining	Plasterboard	R4.1	Yes
Laundry	Plasterboard	R4.1	Yes
PWD 2	Plasterboard	R4.1	Yes
WC	Plasterboard	R4.1	Yes
Ensuite	Plasterboard	R4.1	Yes
PWD	Plasterboard	R4.1	Yes
Bath	Plasterboard	R4.1	Yes
Garage	Plasterboard	R0.0	Yes

Ceiling *penetrations**

Location	Quantity	Type	Diameter (mm)	Sealed/unsealed
Kitchen/Living/Dining	1	Exhaust Fans	250	Sealed
PWD	1	Exhaust Fans	185	Sealed

Ceiling *fans*

Location	Quantity	Diameter (mm)
No Data Available		

Roof *type*

Construction	Added insulation (R-value)	Solar absorptance	Roof shade
Cont:Attic-Continuous	0.0	0.5	Medium

* Refer to glossary.

Explanatory Notes

About this report

A NatHERS rating is a comprehensive, dynamic computer modelling evaluation of a home, using the floorplans, elevations and specifications to estimate an energy load. It addresses the building layout, orientation and fabric (i.e. walls, windows, floors, roofs and ceilings), but does not cover the water or energy use of appliances or energy production of solar panels.

Ratings are based on a unique climate zone where the home is located and are generated using standard assumptions, including occupancy patterns and thermostat settings. The actual energy consumption of a home may vary significantly from the predicted energy load, as the assumptions used in the rating will not match actual usage patterns. For example, the number of occupants and personal heating or cooling preferences will vary.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparing different dwelling designs and to demonstrate that the design meets the energy efficiency requirements in the National Construction Code. Homes that are energy efficient use less energy, are warmer on cool days, cooler on hot days and cost less to run. The higher the star rating the more thermally efficient the dwelling is.

Accredited assessors

To ensure the NatHERS Certificate is of a high quality, always use an accredited or licenced assessor. NatHERS accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

Australian Capital Territory (ACT) licensed assessors may only produce assessments for regulatory purposes using software for which they have a licence endorsement. Licence endorsements can be confirmed on the ACT licensing register

AAOs have specific quality assurance processes in place, and continuing professional development requirements, to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any ongoing training requirements.

Any questions or concerns about this report should be directed to the assessor in the first instance. If the assessor is unable to address these questions or concerns, the AAO specified on the front of this certificate should be contacted.

Disclaimer

The format of the NatHERS Certificate was developed by the NatHERSAdministrator. However the content of each individual certificate is entered and created by the assessor to create a NatHERS Certificate. It is the responsibility of the assessor who prepared this certificate to use NatHERS accredited software correctly and follow the NatHERS Technical Notes to produce a NatHERS Certificate.

The predicted annual energy load in this NatHERS Certificate is an estimate based on an assessment of the building by the assessor. It is not a prediction of actual energy use, but may be used to compare how other buildings 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, indoor air temperature and local climate.

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

Glossary

Annual energy load	the predicted amount of energy required for heating and cooling, based on standard occupancy assumptions.
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, rangehoods, 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.
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.
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.
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
Reflective wrap (also known as foil)	can be applied to walls, roofs and ceilings. When combined with an appropriate airgap 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 device	a device fixed to windows that provides shading e.g. window awnings or screens but excludes eaves.
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.
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).